November 1987 £1

# AMSTRAD COMPUTER USER



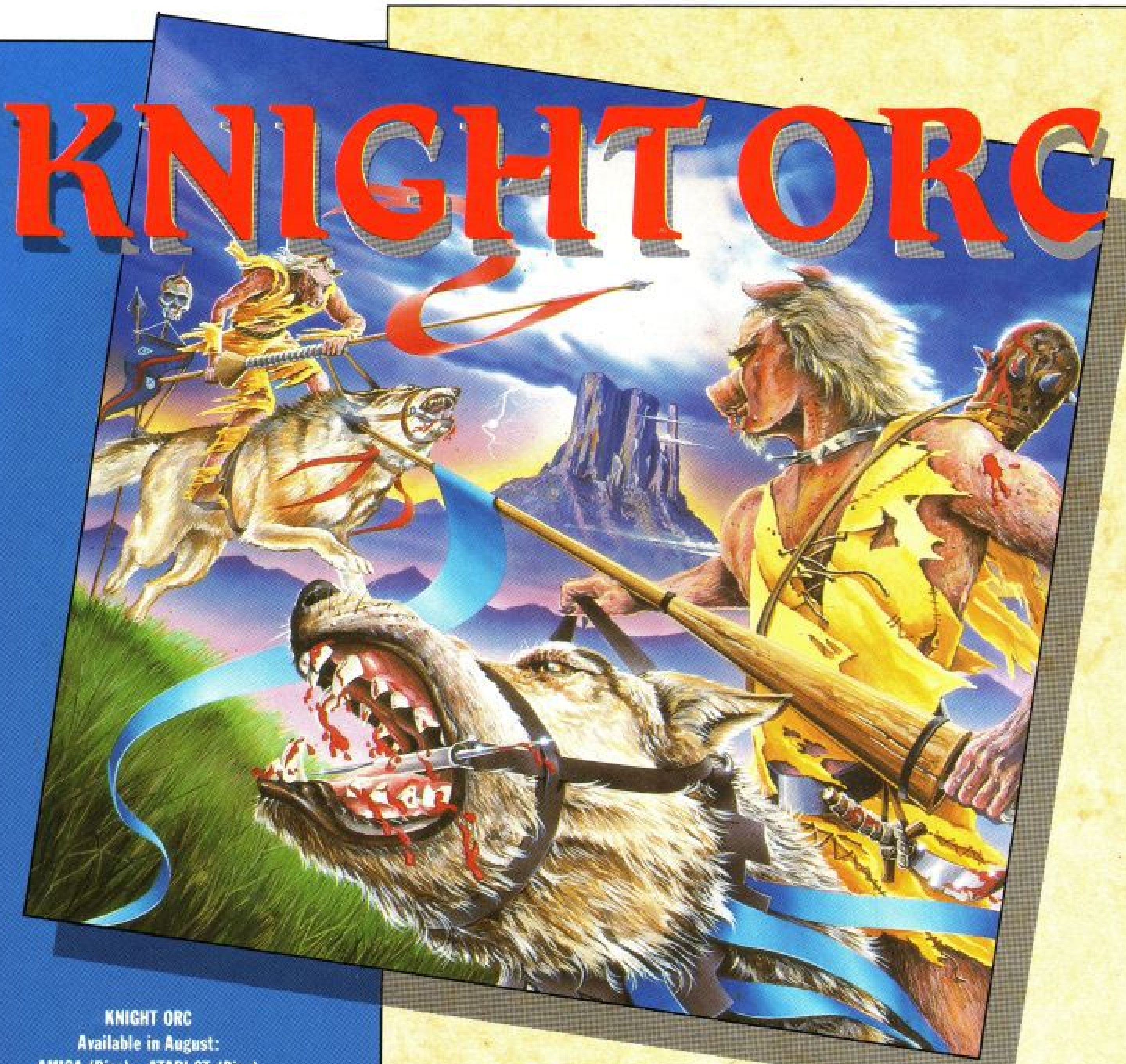

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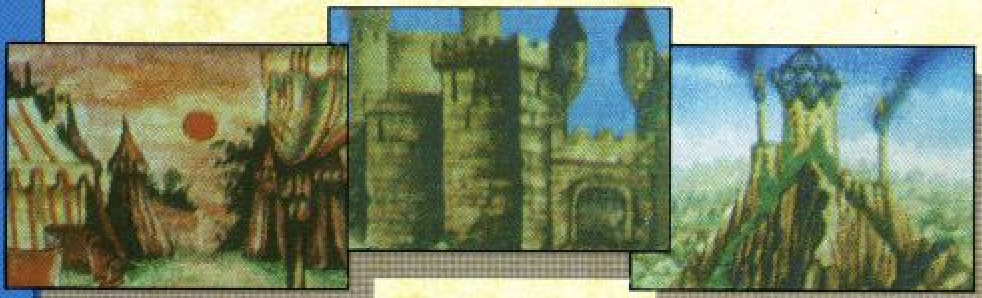

**Enter the world of Knight Orc.**
**The latest, most challenging and fun packed three part adventure from Level 9.**

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**You are cast as a desperate, downtrodden, evil minded Orc on the rampage in adventureland.**

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**Now it's time to redress the balance.**



**With 70 characters to contend with, masses of spells and puzzles to use and solve, you'll need all your Orcish cunning if you are to reap your ultimate revenge.**

**But be warned adventurers, for all is not as it first appears in . . . Knight Orc!**

Screen shots taken from the Amiga version.

Ref: ACU 11/87

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**AMSTRAD COMPUTER USER**

**The official magazine for all users of Amstrad computers**

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ABC
63,599
Jan-June 1987

# How to be a
# COMPLETE



# BASTARD

# Game

Ade is the sort of person who loosens the screws from the handles of disabled persons' toilets or markets Space Shuttle Jigsaw Puzzles.

In the game he has successfully gate-crashed a yuppie party on the posh side of town and to succeed as **The Complete Bastard** he must incapacitate all the guests by the end of the party and light up each letter in the phrase **COMPLETE-BASTARD**. He must also build up as many **Bastard** Points as he can by extremely offensive behaviour.

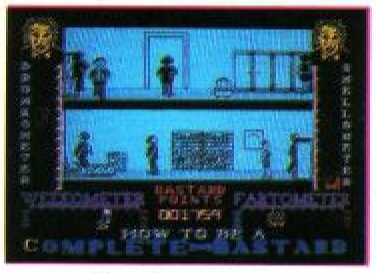
Now you can play Ade and be a **Complete** and **Utter Bastard** in this arcade adventure with split-level screen that's crammed full of absolutely **tasteless humour**.

**'Anything this horrible is bound to sell millions.'** Sinclair User.

Based on the book of the same name © 1986 by Adrian Edmonson, Mark Leigh, Mike Lepine. A Virgin Book.




Amstrad screen.




Spectrum screen.



**HOW TO BE A COMPLETE BASTARD** is available from all daring software retailers, or directly from us **under plain brown wrapper**.

Please make crossed cheques or postal orders payable to Virgin Games Ltd and send to Virgin Games Ltd, 2/4 Vernon Yard, Portobello Road, London W11 2DX.

**PLEASE DO NOT POST COINS OR MONEY**

- ☐ Commodore 64/128 (**£9.95**)
- ☐ Spectrum 48/128 (**£7.95**)
- ☐ Amstrad CPC cassette (**£8.95**)

Name ______________________

Address ______________________

______________________

Total money enclosed ______________________

# New machines are key to prices

IN a move which gives Amstrad customers a choice of more than 20 different machines, the company has launched two new models of PC. Two machines which are no longer mentioned are the 10 megabyte hard disc models, which have not sold particularly well and are expected to be discontinued.

The restructuring of the range leaves Amstrad with six PC 1512 models and nine PC 1640s.

As a result there will be some changes in the prices of most Amstrad computers.

The price of the PC 1512 has been cut by about £50, back to the level the machine was launched at one year ago.

Two new versions of the PC1640 have been introduced, the PC1640 MD and the PC 1640 CD. They have been available in the USA for some time and it makes sense for the improved mono and colour machines to be sold here. They will eventually replace the PC 1512.

Moving down the range, the PCW9512 has been launched at £499. The PCW 8256 is to carry on for the forseeable future, but with a price cut of £100 making it a bargain at £299. The PCW8512 drops to £399 – all prices plus VAT.

Moving to the bottom of the range, the Spectrum Plus 3 has been criticised for being overpriced, despite a number of bundling deals. The price has been cut from £249.95 to the magic £199.95.

All this must leave us wondering what will happen to the CPC 6128. It is the machine which *ACU* expects to maintain its price, although anything which encourages more people to buy CPCs must be seen as a good thing.

The CPC464 and 6128 will be bundled with a joystick and 17 games – including Trivial Pursuit and Seawolf.

*ACU* hopes that Amstrad will continue to produce the machine for the next year at least. The French market is strong enough to justify that, if nothing else.

However there are a number of serious rivals. The Commodore 64 is to have its price cut, and the Atari ST at £299 is perilously close to the 6128 – although that does not include a monitor. Don't expect any major CPC announcements this year though.

On a more positive note, Amstrad has launched two new printers, the LQ3500 and LQ5000, both 24 pin high quality. See our exclusive review on Page 38.

There have been major moves on Amstrad's part to make the company a major world force. Until recently distribution in Italy had been a little patchy. Now Amstrad Italy has been set up. This is owned by Amstrad UK and will take on Olivetti at home – what's the chance of Amstrad following the Italians with a Formula 1 racing car? Probably nil.

Equally exciting is the purchase of Vidco, Amstrad's American distributor. Until recently Vidco has performed a stalwart job of selling Amstrad PC computers.

*ACU* suspects that Amstrad will build on this success by using its substantial financial clout. The takeover cost Amstrad £5 million, coincidentally the same price as Amstrad paid for the Sinclair properties. So if you want to sell out to Amstrad it seems that £5 million is to Amstrad what £299.95 is to computer buyers – the right price.



*"This deal will give Vidco the means to become highly competitive and at the same time have the resources to capitalise on the market's potential.*

*"It was clear that Vidco was unable to support the inventory levels to achieve the penetration of the market we require.*

*"We have learned that the US market is very competitive and, frankly, there seems no room for a middle-man distributor".*

***– Amstrad chairman Alan Sugar talking about the Vidco buy-out.***

Rumours have been circulating about the formation of Amstrad Gmbh. Schnieder currently sells Amstrad computers in Germany and to a number of other European countries. Now it appears that Amstrad intends to take over this marketing, after becoming unhappy with the way Amstrad computers are selling over there. This has not been substantiated.

## We are the Champions

**IT's official. *Amstrad Computer User* is the best selling Amstrad magazine in the country. And it's all thanks to you.**

**The Audit Bureau of Circulation has confirmed the magazine has a circulation of 63,599 copies every month. This is very nearly twice as many as our nearest rival.**

**The ABC is an organisation paid for by publishers and advertisers who act impartially to assess the circulation of most of the major publications in the country. Until now *ACU* has not been ABC certified. Now we have it in black and white that you like us best.**

**But *Amstrad Computer User* is not going to rest on its laurels. There are some super new features coming up. Thank you for making *ACU* the country's favourite Amstrad magazine. We'll ensure it stays the best.**

# THE NEW AMX MK. III MOUSE. TRAP ONE SOON.

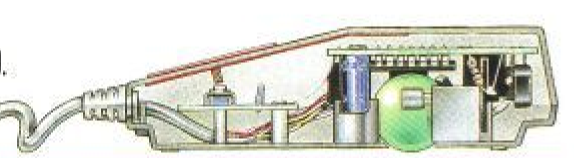



ART AND CONTROL    STOP PRESS

The MK III AMX Mouse is a product of Swiss precision and the result of a world-wide search to find a worthy successor to the AMX Mouse MK II. The new Mouse has been specially chosen to be the perfect partner to the ever expanding range of AMX software.

The unique patented design includes high resolution D.P.I. and superior ball technology to ensure that contact between the Mouse and the surface is constant at all times. There's a new shape too, that fits comfortably in the hand.

Join the great "Mouse-Swap". Part exchange your old Mouse for the new MK III for only £29.99.



## *ART AND CONTROL

**AMX MOUSE MK III PLUS ART AND CONTROL, TAPE AND 3" DISC, £69.99**

Acknowledged as the most sophisticated yet easy to use paint package available for the Amstrad CPC, it's no wonder over 20,000 have already been sold.

AMX Art features include cut, copy, paint, plus many, many more such as fantastic spray and zoom facilities. The package also includes AMX control which enables you to create a mouse environment in your own programs. Available for Amstrad CPC 464, 664, 6128. Please state which version is required when ordering.

## *STOP PRESS

**AMX MOUSE MK III PLUS STOP PRESS, 3" DISC £79.99**

The most highly acclaimed desktop publishing software available for the Amstrad CPC. Already thousands of users are producing professional documents, newsletters, fly-posters etc. In fact anything where text and graphics are required. 'Stop Press' comes complete with 16 variable typefaces. Available for Amstrad CPC. 6128, CPC 664 (+64K min add on Ram), CPC 464 (+64K min add on Ram + Disc Drive). Please state which version is required when ordering.

**STOP PRESS (ONLY) £49.99**

**EXTRA! EXTRA! 2 × 3" DISC £24.99**

300K fantastic clip art and over 25 extra fonts.

## *MAX 3" DISC £19.99

MAX provides an easy to use graphic based front end to your computer's disc filing system including a comprehensive set of disc management operations such as cataloging, copying, deleting and re-naming. Also included are disc utilities such as sector editing, recovering erased files, formatting, verifying and faster tracking. You can also run programs from within AMX. Available for Amstrad CPC, 464, 664, 6128. Please state which version is required when ordering.



## *AMX MAGAZINE MAKER 3" DISC £129.99

A combination of Stop Press and the Rombo Vidi-Video digitiser. Using any video and the digitiser, images from a camera or TV can be converted into a graphics screen with Stop Press to illustrate magazines or newsletters. In fact anything that needs to be created on A4 size paper. With Stop Press's many features a variety of pictures can be composed, the only limit being your imagination.

**ROMBO VIDI DIGITISER (ONLY) £89.99**



There is also a growing list of AMX support software including: AMX 3D Zicon (3" Disc) £24.99 with Zicon you can transform vector data into on screen graphics. Printers and plotters are fully supported, AMX Utilities (3" Disc) £19.99 Utility software for the original art program supplied with AMX Mouse. A Mouse and Interface (only) can be purchased for £34.99 direct from AMS using the order form enclosed in MAX, Stop Press and AMX 3D Zicon. These superb products are available from all good computer dealers or direct by cheque, Access or Visa. All prices include VAT and post and packaging.

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# DTP gets its yearbook

THE world's first yearbook dedicated to the rapidly-growing desktop publishing industry is being produced to coincide with the most important exhibition event in the DTP calendar – The Desktop Publishing Show 1987.

Compiled with the co-operation of PIRA, the UK Technology Centre for the printing and publishing industry, the yearbook will have comprehensive details of price-performance of all the most important hardware and software in the field, and detailed articles aimed at the newcomer and the experienced user.

All visitors to the show – being held from October 15 to 17 – will receive a free copy.

Meanwhile another category has been added to the list of PIRA-sponsored Desktop Publishing awards to be presented at the show.

Already the search is on to find the best DTP newspaper or magazine, in-house company report and leaflet or newsletter. The extra award is for the best example of a "predominantly DTP produced" book.

Details on how to submit entries can be obtained from 061-456 8383

# On with the show

GOOD news concerning the forthcoming Amstrad Computer Show in Manchester is that it will include the Amstrad Theatre – scene for non-stop presentations of all that's new for Amstrad machines.

This is the first time the highly popular attraction has been a feature of an Amstrad Computer Show outside London.

The auditorium includes seating enabling 150 to watch and listen in comfort while experts demonstrate the latest hardware and software and conduct question-and-answer sessions.

In addition, there will be no fewer than eight feature stands occupied by Amstrad itself, the Official Amstrad User Club and major suppliers.

These impressive focal points – just part of the total of 70 exhibitors – are made possible by the show's location.

The 100,000 sq ft Greater Manchester Exhibition Centre was specially chosen by organisers Database Exhibitions to house the UK's biggest computer specific show ever held outside London.

Already a large number of firms have said they will bring exciting new products to the show – providing visitors with an ideal opportunity to fill their Christmas stockings.

The show runs from Friday to Sunday, October 23 to 25. A money-saving advance ticket order form is on Page 41.

# Word perfect

COMPUTER users can now have access to what is claimed to be the biggest – and most up-to-date – multilingual dictionary in the world.

It is all part of a new service being offered by MicroLink, the UK's fastest growing electronic mail service, through a cross-Channel electronic link.

The computerised dictionary offers translations from any one of eight languages into any other – or into more than one at the same time.

Sitting at their keyboards, all subscribers have to do is type in a word or a complete phrase and the Great European Dictionary does the rest.

Housed in an EEC sponsored mainframe computer in Luxembourg, it is the result of a massive collaboration between language experts throughout the community.

The Great European Dictionary consists of more than 380,000 words and phrases in English, German, Danish, Dutch, French, Italian, Portuguese and Spanish.

# New software

With magazine publishing lead times being a constant burden it is difficult to keep up to date with what is new on the shelves in your local computer shop.

But we try. Here is a round up of the latest releases in a major London shop, with thanks to Justin Garvanovic and JKL Micros of Uxbridge.

**Transmuter**
*Codemasters*
£1.99. Yet another Nemesis clone, and a bad one at that. Probably the worst sprite routine ever seen on the Amstrad. We can't see how anyone could actually release this and hold their head high. Terrible.

★ ★ ★

**Dizzy**
*Codemasters*
£1.99. From the authors of the excellent Grand Prix Simulator comes this mediocre multi room jaunt. Codemasters seems to have a serious case of sprite flicker this month. Take the tablets ready for next time.

★ ★ ★

**Death Wish 3**
*Gremlin Graphics*
£9.99. We're usually a fan of the In house Gremlin stuff but this is a bit of a let down. It reminds you a bit of the Marsport style games from Gargoyle. Good digitised title screen, and the Benn Daglish tune isn't all that bad.

★ ★ ★

**Wizball**
*Ocean*
£8.95. Conversion time again with this release from Ocean. You play a Wizball and a cat (probably the Hairy Hacker's) and have to collect paint to bring colour back to the landscape. Some warped minds behind this.

★ ★ ★

**Classix 1**
*The Edge*
£6.99. Compilation of three games and two demos. The games are: Bobby Bearing, Brian Bloodaxe (with an Ingenious title screen) and Palitron. Demos for Shaolin's road and Shadow Skimmer are also included. Worth buying for Bobby Bearing.

★ ★ ★

**Warlock**
*The Edge*
£8.95 From the author of Palitron comes another 3D isometric effort. Plays almost identically to Palitron and so suffers from the same speed problem when there are lots of sprites on the screen. Above average graphics.

★ ★ ★

**Core**
*Bug Byte*
£2.99. Re-released at a budget price, originally released by A 'n' F. This is another example of a straight Spectrum conversion, monochrome sprites as far as the eye can see. Wander round oodles of screens, collect thzzzzzzzz.

★ ★ ★

**Catch 23**
*Martech*
£8.95. Vector graphics time again. This game reminds you of Mercenary. Includes some sprite graphics just to spice up this vector romp.

# GALLUP SOFTWARE CHART

| Pos | Move | Title / Publisher / Price | Comment | Last month | Market strength |
|---|---|---|---|---|---|
| 1 | Up | **Paperboy** *Elite* 8.95 | This game was late out on the Amstrad due to strict quality control. Written by an ex-Vortex man, it is the best conversion of the arcade game, even if it has no sound at all. | 3 | 100 |
| 2 | Up | **Grand Prix Simulator** *Code Masters* 1.99 | The racing game for those who know their opposite lock from a four wheel slide. Super Sprint by any other name would still play as sweet. This is a bargain. | 4 | 98 |
| 3 | New entry | **Cricket International** *Addictive* 1.99 | Bad timing to bring this out as the cricket season is bowled out. A good game, something to remind you of leather against willow until next summer. | NE | 93 |
| 4 | Up | **Milk Race** *Mastertronic* 2.99 | Good to see Mastertronic sponsoring sport. We would prefer to see more effort directed at the motor racing car sponsored by Mastertronic. | 7 | 73 |
| 5 | Down | **BMX Simulator** *Code Masters* 1.99 | Cycling simulator best played with a friend. A good, fun game with a low price. BMX may be on the decline, but the memory kind of lingers. | 1 | 72 |
| 6 | Down | **Destructo** *Bulldog* 1.99 | Falling almost as quickly as it rose, Destructo is overrated. Proof that a well distributed budget game will sell; a full price game has to be really good to chart. | 2 | 70 |
| 7 | Down | **Ghost Hunters** *Code Masters* 1.99 | A spooky game by the same programmers as Grand Prix Simulator. It will be interesting to see what happens with the full price games from Code Masters. | 6 | 66 |
| 8 | Up | **Run for Gold** *Alternative* 1.99 | Proof positive that the small-time software house can still make a good showing if the price is right. Making a new entry into this chart is some achievement with so many good new titles around. | 12 | 63 |
| 9 | Down | **Barbarian** *Palace* 9.99 | Showing that sexisim is good for sales and a bit of decapitation doesn't hurt the bank balance. Well programmed, detailed graphics; no morals | 5 | 86 |
| 10 | New entry | **The Living Daylights** *Domark* 9.95 | Follow 007 around the world in his computer caper. Well programmed with detailed sprites and smooth scrolling. You need to be sharp of eye and quick of wrist. | NE | 42 |
| 11 | Down | **Feud** *Bulldog* 1.99 | First game on Mastertronic's new label. Chunky sprites and a mystic plot go to make up this 2D arcade game. Long runner in the chart. | 10 | 40 |
| 12 | Down | **Six Pak** *Hit Pak* 9.99 | The Amstrad chart is usually dominated by compilations. This month things are different, only three in the top 20 and none in the top 10. | 11 | 38 |
| 13 | New entry | **Ninja Master** *Firebird* 1.99 | Long in the tooth Oriental decathlon. Chop bits of wood, avoid flying stars and wince at the naff graphics. Even the theme is tired. Give it a rest. | NE | 36 |
| 14 | New entry | **Mission Genocide** *Firebird* 1.99 | The best, the most incredible scrolling game ever. Written by Paul "Spindizzy" Shirley. Lots to shoot, bomb the Bad Stars. Worth more than £1.99. | NE | 36 |
| 15 | New entry | **Mission Jupiter** *Code Masters* 1.99 | Ignore the fact that anything which tried to land on Jupiter would get crushed by atmospheric pressure, and that the planet is really a ball of gas. This is a scrolly-shooty-spritey game. | NE | 35 |
| 16 | Up | **Gauntlet** *US Gold* 9.99 | Quality pays. A wonderful program, great sprites, often copied never equalled. If you've got it buy the deeper dungeons. | RE | 34 |
| 17 | New entry | **Park Patrol** *Firebird* 1.99 | Once a full price Activision title, now more realistically priced. Good fun, non-hostile. Keep the park clean on land and lake. You play parkie in search of coke cans. | NE | 34 |
| 18 | Down | **Konami's Coin Op Hits** *Imagine* 9.95 | Take the best from the arcades into your home. Green Beret, Ping Pong, Hypersports, Mikie and the splendid Yie Ar Kung-Fu. Looking a shade dated now, but a good blast all the same. | 15 | 33 |
| 19 | Down | **Big 4** *Durell* 9.95 | Top notch compilation. Two excellent games, one good one and a totally new program. With this kind of value it is a surprise that Big 4 has tumbled so far from number 1. | 17 | 30 |
| 20 | Down | **Army Moves** *Imagine* 9.95 | The first Imagine game to result from a deal with the Spanish software house Dinamic. Bouncing buggies and 2D graphics. | 18 | 30 |

Key: Non-mover · Up · Down · New entry

# MASTERFILE III

**FOR THE AMSTRAD CPC 6128 (ALSO CPC 464/664 WITH DK 'TRONICS 64K RAM)**

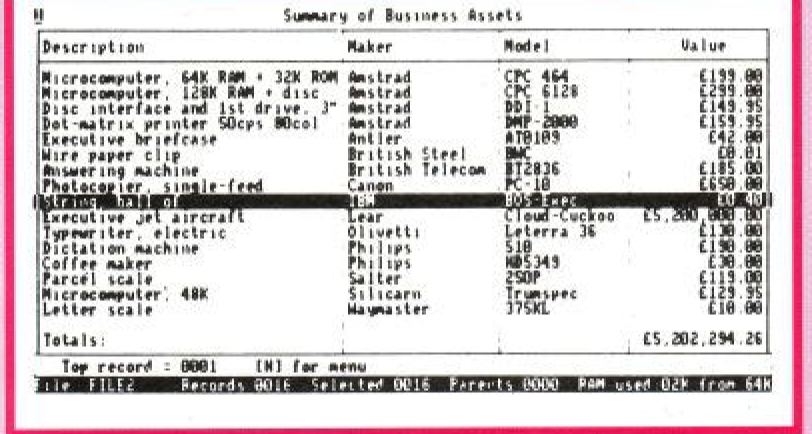
## FIRMLY ESTABLISHED ...

MASTERFILE III is now firmly established as THE filing system for the CPC6128. It has received rapturous reviews and we could paper the walls of our new offices with our customers' letters of appreciation.

For the benefit of newcomers to the CPC machines: MASTERFILE III is a powerful and flexible data filing and retrieval system. All "database" systems require that your data is organised into fields and records. Unlike most, MASTERFILE does not commit you to field lengths or formats, since ALL data is variable-length and optional. Files are not pre-formatted, and only used bytes are saved to disc. Also, unlike the rest, MASTERFILE allows multiple user-defined ways of viewing/printing your data. And unique in its price range, MASTERFILE offers RELATIONAL FILE options, whereby common data can be entered just once and shared by many records. Maximum field size is 240, maximum fields per record is over 50, and maximum file size is 64K. Room for 1,000 full names and addresses, for example. Only one disc drive is required. It is menu-driven throughout, and comes with detailed illustrated manual, and example files.

## SO VERY VERSATILE ...

Just about ANY kind of information can be handled by MASTERFILE. You can EXPORT the data to other systems (e.g. PROTEXT/MERGE and TASWORD). You can even merge your own USER BASIC to MASTERFILE for customised file processing, or build new files from other computer sources. The speed of SEARCH of MASTERFILE is second to none. Records can be sorted ascending/descending, character or signed numeric, even embedded keys such as surnames. Other functions are field-to-field calculations, and several-across label printing. We simply don't have room to list all the features; give us a call if you are still in doubt of the power of MASTERFILE III.



Summary of Business Assets

| Description | Maker | Model | Value |
|---|---|---|---|
| Microcomputer, 64K RAM + 32K ROM | Amstrad | CPC 464 | £199.00 |
| Microcomputer, 128K RAM + disc | Amstrad | CPC 6128 | £299.00 |
| Disc interface and 1st drive, 3" | Amstrad | DDI-1 | £149.95 |
| Dot-matrix printer 50cps 80col | Amstrad | DMP-2000 | £159.95 |
| Executive briefcase | Antler | AT0109 | £42.00 |
| Wire paper clip | British Steel | BWC | £0.01 |
| Answering machine | British Telecom | BT2836 | £185.00 |
| Photocopier, single-feed | Canon | PC-10 | £650.00 |
| String, ball of | [illegible] | [illegible] | [illegible] |
| Executive jet aircraft | Lear | Cloud-Cuckoo | £5,200,000.00 |
| Typewriter, electric | Olivetti | Leterra 36 | £130.00 |
| Dictation machine | Philips | 510 | £190.00 |
| Coffee maker | Philips | HD5349 | £30.00 |
| Parcel scale | Salter | 250P | £119.00 |
| Microcomputer, 48K | Silicarn | Trumspec | £129.95 |
| Letter scale | Waymaster | 375KL | £10.00 |
| Totals: | | | £5,202,294.26 |

Top record = 0001 [M] for menu

File FILE2 Records 0016 Selected 0016 Parents 0000 RAM used 02K from 64K

## ALL THIS POWER ...

This is no toy thrown together in BASIC and half-tested, but real machine-coded computing power professionally constructed. We have had IBM and Apricot users beg us for a MASTERFILE for their machines — when they had seen the earlier CPC MASTERFILE. All this power is yours for ... £39.95.

For those who already have an earlier MASTERFILE, we offer updates; please telephone for details. You will be amazed at the performance improvements and extra functions.

**★★★ PCW users: be patient, MASTERFILE 8000 will be ready early in 1987 ★★★**

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Hi, I'm Lance Davis, your letters editor. If there is anything you think Amstrad computer users ought to know about then drop me a line. I can't deal with individual problems and this isn't really the place for programming tuition but it is the place for bouquets and brickbats, views and opinions. Write to me at the address in the front of the magazine or on Telecom Gold System 72:mag012. Remember that some writers will be sent free software, so let me know which computer you have.




## Getting the point

I AM beginning to find Basic a bit limiting as it does not allow me to use the full capability from my machine. I would like to move on to machine code and would appreciate some advice about this.

Which book or pack would you recommend that would give me as much information as possible on machine code, hints and tips on how to use it, listings of example programs and so on?

When machine code is talked about, the word Assembler seems to occur. I am still not really sure what an assembler actually is, as some books describe it as a "machine code translator for the computer", others as a "pack of programming utilities", and others just as a "ASM file changer".

What is an assembler? and, if it is necessary to have one to program in machine code, could you recommend one that isn't too expensive?

**Ben Breveton,**
**Melton Mowbray**

## Missing the point

I AM writing with a question: I saw a program in assembly point in the August issue of *ACU* and tried typing it in. As soon as I pressed the Enter key after each line I got a Syntax error message. Do I need an assembler or special program to type in and run this listing? I have a CPC464.

**Simon Howe**
**Bournemouth, Dorset**

***LD:*** *Yes you do need an assembler, but I'd say that if you are as green as your letter would indicate then you are jumping in at the deep end with Assembly Point.*

*I'd recommend the Ed's favourite machine code book – Dr Watson's Guide to Assembly Language Programming from Glentop Press. There was a discount voucher for it in last month's issue. That includes a simple assembler.*

*If you just want to buy an assembler then Maxam from Arnor is very easy to use.*

## Upgrade

I HAVE recently acquired the DK'Tronics 64k ram for my CPC664. Does this make my computer compatible with all the CPC6128 software? If so, would you recommend The Informer (from Treasure Island Software) as an art package?

**J F Smart,**
**Portsmouth, Hants**

***LD:*** *Due to the clever design of the DKT Ram pack an upgraded 664 should function in the same way as a 6128. The ENABLE command supplied with the ram pack will see to any program which doesn't.*

*Informer is a display package – you'd be better off looking at Rainbird's Art Studio or Treasure Island's Parrotry packages.*

## Future Shocked

IN my August edition of *ACU* I read the article with regard to the future of the CPC. The way I read it is that you intend scrapping Arnold and concentrating on that load of rubbish – the Spectrum, which was completely useless.

I am surprised at you doing this as your own Amstrad CPCs are the best on the market. Having purchased the Amstrad CPC464 with colour monitor, and more recently the DMP 2000 printer – not to mention all the software – I am anxious to know if this information is true.

And if it is, how do we cope in the future with repairs or whatever? Will you be replacing the items or will we have to purchase another computer?

As a student I use these items to further my education as I intend to work in computers in the future. Could you possibly put my mind at ease as to the future of the CPC?

**L.S. Roberts,**
**Wrexham**

***LD:*** *The article was the result of research, not really ACU's opinion. I felt that it reached the conclusion that*

*the CPC is still going strong thanks to the European market. Even if Amstrad were to stop importing the machine to Britain there would still be strong software support from those companies which sell worldwide. Amstrad hardware support is excellent, I had a 664 repaired recently and they usually have stock of parts for machines which have not been made for seven years.*

## Starry eyed

AS an amateur astronomer and 6128 owner I would welcome astronomical programs in Amstrad format. Apart from Amsoft Starwatcher I know of no available programs for Amstrad. They are available for Spectrum, IBM PC, Apple II and BBC Model B – so what about it?

**B.P. Hughes,**
**London**

***LD:*** *This is the old problem of minority interest software. A good game will sell around 10,000 copies at £10 each. If you sold a copy of your astronomy program to 20 percent of the people who regularly use a CPC and a telescope you'd be doing well.*

*I'd guess that 1,500 people might be interested. That means the program would have to sell at nearly £70 to be a worthwhile proposition, and then it all falls down of course.*

*Few people are willing to pay that, the price goes up, fewer still are interested and so on. It is the same problem as has been discussed in these pages about genealogy and flight simulation.*

## Lost Oasis

I RECENTLY purchased Ocean's Laser Basic to help with the sprite design and movement in some of my programs. I used it for a few weeks, finding it an excellent program with which to design sprites and enhance programs.

So far I have only one question to put forward to Oasis; Do you need the Laser Compiler to compile your programs that use Laser Basic to be able to sell them, or can you buy a cheaper compiler to do the same job?

I wrote to Oasis asking this question, using one of their technical enquiry cards supplied. It clearly states that "Oasis believe in giving full technical support to all their products".

About a week later it was returned to me in a Post Office Returned Postal Packet with a line through the address and the words Gone Away scrawled beside it.

You are the only person I can think of asking to help with this problem. Please could you tell me if you have any idea where on earth (or off it) Oasis Software is?

**Conan Ablewhite,**
**Leicester**

***LD:*** *You certainly do need the Laser compiler to produce machine code from a program which uses Laser Basic commands, but Oasis went into liquidation nearly a year ago, and, as a result of this the program is no longer available. It is a shame because the Laser programs were excellent. Perhaps they spent too much time supporting the product.*

## Bit rot

Shock! Horror! Corruption at the highest levels among the *ACU* editorial staff! This, I am afraid is the only conclusion I can draw from the following sad tale.

November 1986 marked the start of a superb new feature, Assembly Point, part 1. By February 1987 we had reached part 4, and things were looking good. Then in March, a new issue, a new Assembly Point article, but, vot iz zis? Part 4 again?

Some sly guy had executed a RENUM command on the series and since then every article has been given a number less than it deserved. So, for example, part 9 in September's issue should really have been part 10. This looks like an attempt to pay Mr Peter Green, the author, for one less article than he actually wrote. It's a disgrace! Irangate all over again, at *ACU*.

Or maybe the editorial staff are innumerate ... no, not in a computer magazine.

**Stephen Graham,**
**Chichester, West Sussex**

***LD:*** *Then last month Assembly Point disappeared altogether! This is not an attempt to defraud Mr Green, but I'll bribe you with a copy of Virgin's Election game.*

## Disc delay

WHY is it that when Amstrad brings out anything new which can be added to my CPC464, I have to go on a bl***y waiting list as the item I require has sold out?

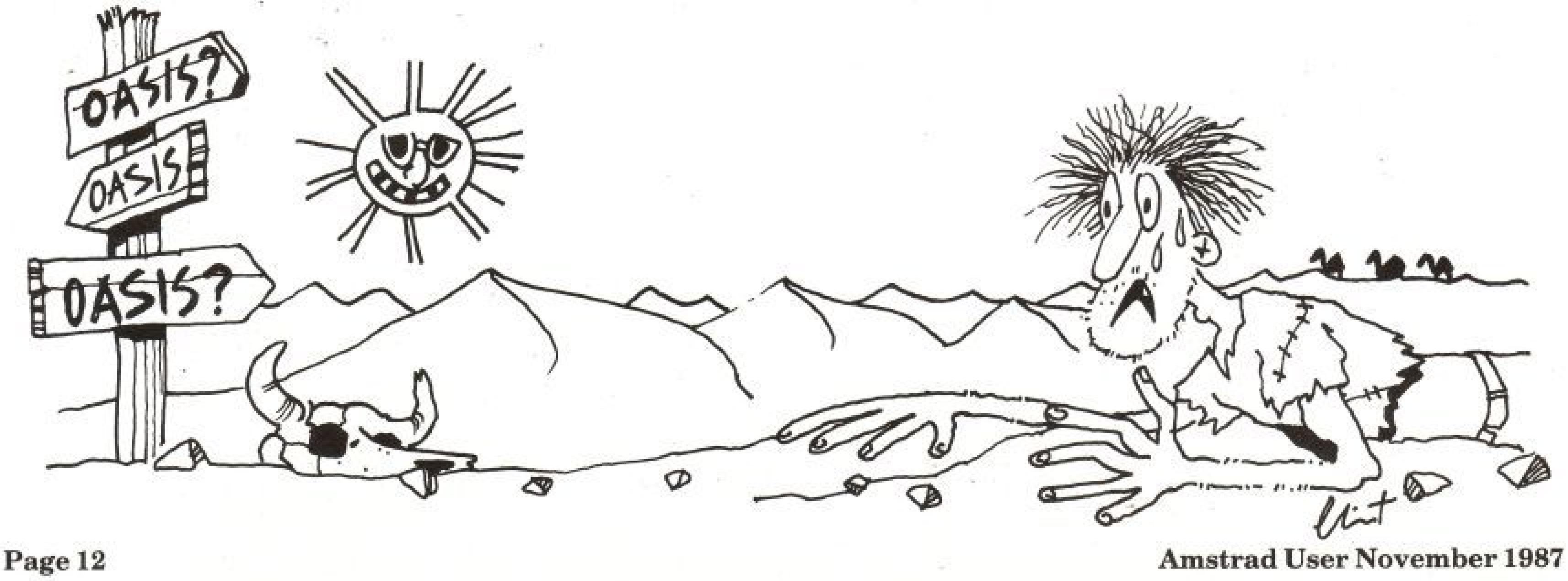
I have been waiting for the DDI-1 Disc Drive since last October: And can I get one? Can I hell. Sorry about that, but I have really tried to get this DD so much so that I am now writing to you to see if you can put me in touch with a company that can supply the item I require, and don't have to go on a waiting list for another year ...

**Mike Southey,**
**Norfolk**

***LD:*** *When you say that you are on a waiting list I assume you belong to the user club. That is the best place to wait since they place the biggest orders with Amstrad and so get the largest proportion of drives when they are shipped. So if you are not in that queue then join it.*

## Monitor madness

SIX months ago I bought a CPC6128: As I was not sure if my family would take to computing we only bought the green screen version. I soon realised how valuable colour would be so we purchased a modulator for use on the



# Half a dozen steps to the right decision.

*When you've seen one printer you really haven't seen them all. That's why, when you're trying to choose your first or your next, you really need all the help you can get. Here are a few steps to get you started.*

**1 Compatibility.** You needn't worry about matching any of our six 9-pin printers with your present system. A simple slot-in interface means that any

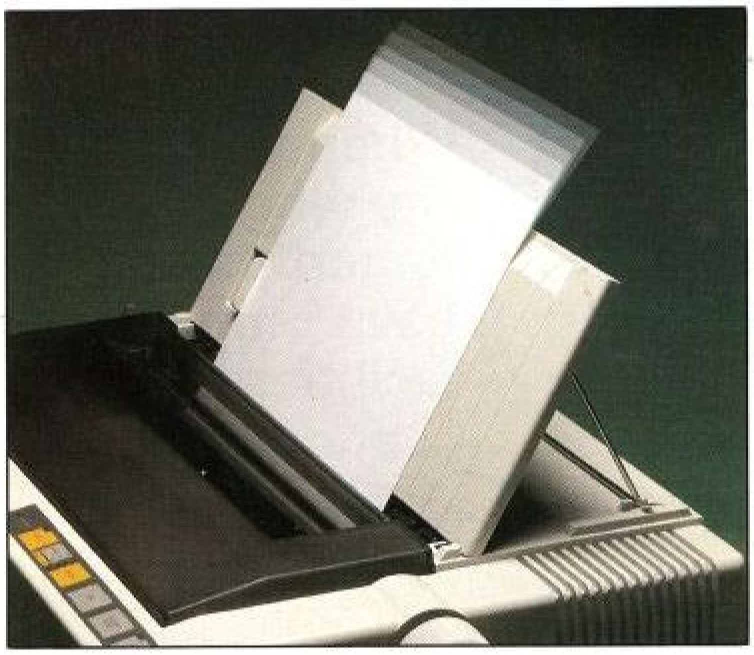


Star printer can be used with virtually any terminal or PC set up. And, equally important, the software command sets are switchable.

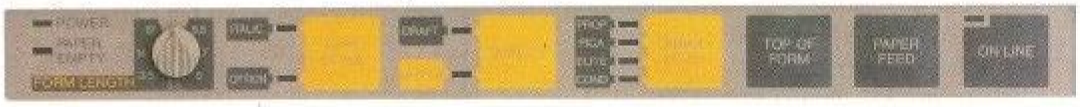
**2 Value.** Getting more doesn't mean you have to pay more. All our printers are proof of that. Whatever your budget, the Star 9-pin printers start from just £248 for the NL-10 going up to £589 for the NR-15.




**3 Simplicity.** The Front Control Panel on all Star business printers gives you total control at the touch of a button. Selecting draft or Near Letter Quality printing, print pitch, margins and paperfeed control are sheer simplicity. No mess, no fuss and no more fiddly DIP



switches for all your usual daily needs. All our machines have semi-automatic single sheet feeding too. Simply drop your page into the top, press a lever,




and the printer advances it to the correct position ready for printing.

**4 Performance.** Star's 9-pin range has a choice of two paper widths, either 10" or 15" (80 col or 136 col) and three performance levels 120, 180 and 240 cps for draft quality listings, statements and spread sheets. They also have very respectable Near Letter Quality speeds of 30, 45 and 60 cps for correspondence and more important documents. In either mode, Star's print clarity is envied by our competition.

**5 Support.** When you buy a Star printer you buy superb back up too. We've a National three-level support system which operates through all our registered Star dealers backed by the finest distributors in the country, so you're in good hands. Should you need any help at any time, our dealers will give you all the friendly, knowledgeable assistance you need.

**6** *If you still can't quite make up your mind, fill out this coupon. We'll send you our brochure so you can discover even more about the remarkable Star range of printers for business. We'll also tell you about our range of 24-Pin printers too. Or just call Belinda on 01-840 1829.*

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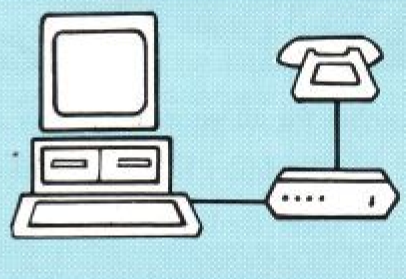
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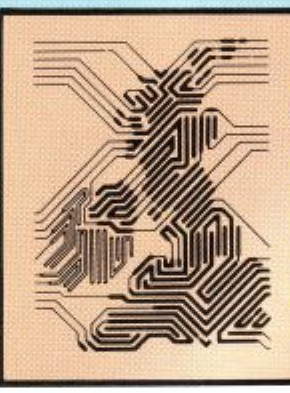


| | Typical comms packages |
|---|---|
| A | *Cirkit: Acoustic V23 modem + RS232 interface + tape or disc comms software (£35.40)* |
| B | *KDS: Minimax V21, V23 autodial modem + RS232 interface + comms rom (£99)* |
| C | *Pace: Nightingale V21, V23 manual dial modem + RS232 interface + Commstar rom (£159)* |
| D | *Pace: Linnet V21, V23 autodial modem + RS232 interface + Commstar rom (£213)* |

All you need – apart from your Amstrad – is a modem, which plugs into your telephone wall socket, an RS232 interface and suitable communications software.

We have provided a list of possible combinations (left), ranging from the very cheapest to ones which can automatically dial the MicroLink telephone number and connect you directly to the service – all you have to do is type in your personal security password.

Whichever equipment you use, you will be able to call MicroLink, open your mailbox, save to disc any messages waiting for you, and disconnect in as little as two minutes.



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ACU11



colour television.

I still feel at a loss though as the picture is not very sharp. Is there anywhere I can buy a colour screen only, or do I have to sell my computer and start again?

**S.Houlding,**
**Sutton on Sea, Lincs**

***LD:*** *The official Amstrad answer is to sell your mono system and buy a colour one. You can see the logic in this: You wouldn't expect to be able to buy an 1100cc Fiesta, decide you want a 1300cc one and expect Ford to offer an upgrade service. But you could do it yourself if you had the necessary skills.*

*In a similar way you can buy a colour monitor and connect it to your 6128: You will need a monitor with linear input and you will have to build a lead. The modulator will provide power to the computer and disc drive.*

## More screen screaming

HELP! I know this may sound daft, but I am a CPC464 owner with green screen. I was wondering where I could get a colour monitor, and roughly how much it would cost. I drew a blank in many high street chain stores, so in an act of desperation, wrote to my favourite mag.

By the way, if Vax and his lunchtime lubrication are going to publish more "space scoops", please eliminate mistakes, such as calling $C_6$ $H_{12}$ $O_6$ sucrose, when it is glucose. Oh, and by the way, regarding your Hewson interview, frogs aren't reptiles.

I've been reading this magazine for over a year now and it seems to get better and better. Oh well, sounds like a game's loaded on to my GREEN SCREEN (aagh), so I'd better go.

By the way, I do have a modulator, but every time I go to put the computer on the TV, Eastenders, Dallas or some other such rubbish comes on.

**George Menzies,**
**Ballindalloch, Scotland**

***LD:*** *For the answer to the screen problem I refer the honourable gentleman to the answer I gave to S.Houlding.*

*For your questions about sugar and frogs I congratulate you and wish you luck with your O level Biology. As a television critic you have admirable taste.*

## RTFM

PLEASE could you provide me with some information. I have a Silver Reed EX43N typewriter with a I/F 44 connected to an Amstrad CPC6128 computer. I use Protext word processing.

How can I print a pound (money) sign. All I get is R#R when the key is pressed. Also, how can I stop the @ at the start of all printing.

I would be very grateful if you could help me to solve these small problems in an otherwise excellent set up for my needs.

**Colin Bond,**
**Lincolnshire**

***LD:*** *You need to configure the Printer driver: This is done using the PRINTER command – all the details are in the Protext documentation.*

## DMP doldrums

COULD you please explain a detail or two for me about the new DMP 3160? Very often the Amstrad News (when it gives details) begs the question. It states that the new printer will work with the 464 but has a PC printer lead. I presume it will work with a 464 printer lead.

It also states that it has a full IBM character set. What might a full IBM character set look like? And presuming it is the 8 bit printer port, will it give the full IBM character set if a KDS 8 bit port add-on is fitted to my 464?

**Mr. D. White,**
**Northampton**

***LD:*** *Centronics is Centronics is Centronics: This means that any printer with a Centronics port will work with any computer likewise equipped.*

*The seven bit limitation is at the computer end. By fitting a KDS 8 bit port to your CPC you will get extra characters on any printer, be it a DMP 2000, 3160, an Epson FX86 or an Amstrad LQ 3500.*

*The letters in an IBM character set look the same, but there are some extra symbols like faces, hearts and boxes. As you have guessed you will need an 8 bit interface for these, but it will work acceptably on a 464 without an extra interface.*

## Disc expansion

I OWN an Amstrad 6128 and have now started to use several serious applications packages which use a large amount of disc space. However I am limited to the 3in drive that is an integral part of the computer.

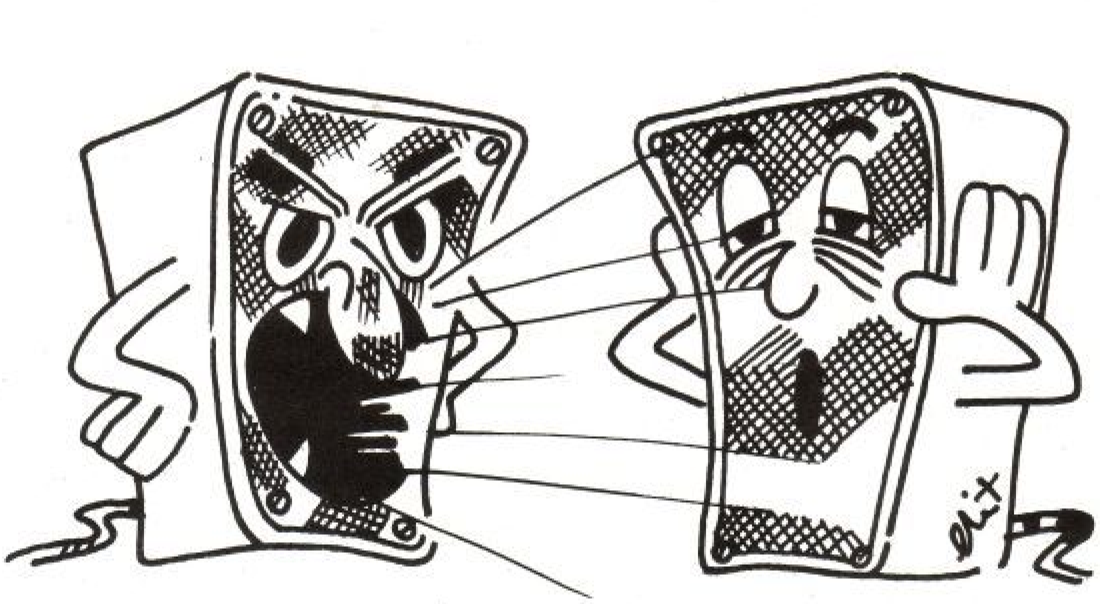
I am now considering upgrading my system for a bigger disc capacity. Unfortunately I am not very knowledgeable about the current disc drive market and this is why I am writing to you for advice.

I am very interested in hard discs because of their greatly improved access times and large capacity, and I ask you to recommend several that have about 20Mb of storage, are fairly good value-for-money, but most of all are compatible with the Amstrad 6128.

**Barry Goodsell,**
**Maidstone, Kent**

***LD:*** *There are no hard disc drives available for the CPC. You can try Nine Tiles on (0223) 862125, which has a network which incorporates a hard disc, but this is expensive and little*

*faster than floppies. The floppy disc capacity is limited both by software and hardware. The PCW has a 720k drive but cannot be used with a CPC because the disc rom does not cater for it. The best solution would appear to be a 5.25in drive and the Rodos rom from Romantic Robot on (01) 200 8870.*



## Musical circles

IN the last few months I have been most impressed by the standard of The Advanced Music System and The Art Studio when run on my CPC6128. Rainbird has received rave reviews of its products, and rightly so. However, I have come across a few problems when using these programs which I am sure are of interest to *ACU* readers.

Firstly, The Advanced Music System appears to have no facility to cope with triplets – a fairly common item of musical notation where one crotchet is replaced by three quavers taking the same time period. Is there any way round this problem?

AMS also seems to have difficulty in its printer module when trying to print two consecutive pieces of music with different time signatures – the correct time signatures for the second piece are not printed as claimed in the manual.

When using The Art Studio to print a picture on my DMP2000 I have gone to more than a little trouble experimenting with the aspect ratio, as suggested in the user manual, trying to get circular circles on the printout – without success.

Can you give me any hints or is it a limitation of my combination of CPC6128, DMP2000 and The Art Studio? If that is the case then how does the print facility in AMX Art (supplied with friendly rodent) manage to produce circular circles at the click of a mouse?

I am still extremely pleased with my Rainbird utilities, but would be grateful if anyone can point out where I'm going wrong.

**Richard Hall,**
**Rochester, Kent**

***LD:*** *Grahame at Rainbird proved exceptionally helpful with this one. You can't have triplets on the Amstrad AMS, but you could fiddle the time signature to simulate them.*

*He does not know of any problems with the printing, so I suppose it could be a bug. The aspect command is difficult to use, because there are so many different types of printers.*

*You have two options, either draw your circles oval, so that they print round, or persevere with the aspect adjustment.*

## Sound advice

IS it possible to print out music on a Kaga Taxan printer using the Advanced Music System? I presume this is not just an individual problem; the printer was well received in Amstrad magazines when it appeared, so there must be a fair number of CPC users with it.

The problem seems to be the old line-feed chestnut, but running a program to suppress the Amstrad's line-feed signals before loading TMS doesn't seem to work.

I for one would be keen to read the details of anyone's successful use of this printer – or, failing that, any printer – with the Advanced Music System.

**James M Brown,**
**Coleraine, Northern Ireland**

***LD:*** *The line feed problem can be cured with a scalpel: Cut the wire to pin 14 and all will be ok. The Kaga Taxan is no longer available, but you can still get the Cannon PW 1080. This has a slightly different rom but shares the same mechanism and exceptional print quality. My fave cheapie printer.*

## The winner

IN the August Edition of *Amstrad Computer User*, you had a competition – here is my attempt:

STORM was out walking one day, and he met THE APPRENTICE, who was searching for the JEWELS OF BABYLON, STORM said "FINDERS KEEPERS" so they searched the 180 CAVES OF DOOM. They went INTO OBLIVION everywhere. Then a NINJA came so STORM THRUST out leaving THE APPRENTICE to find a HELICHOPPER to a BREAKOUT.

STORM got lost, MOLECULE MAN came by and asked "who are you looking for". "I'm looking for STORM" said THE APPRENTICE. He looked in RADZONE and there he was "I can see STORM II" said MOLECULE MAN. "I was looking for you" said THE APPRENTICE, "good job I never went into THE DEEPER DUNGEONS or I would have never have found you".

Then they turned into HOME RUNNERS and ran home.

**Michael Upchurch,**
**Alvaston, Derby**

***LD:*** *Well done Michael, a bundlette of goodies should have plopped on to your doormat by the time you read this. No more entries thanks.*

## Budget and bungle

WHEN looking at the recent Gallup Charts, I notice that there are quite a considerable number of budget games. Last month in the September issue the first three games were budgets. I would like to congratulate Mastertronic and Code Masters especially, for bringing out budgets that are worth full price games.

What has happened to originality in the full price games? For example, Barbarian is a great release from Palace (yet again), but it is the usual combat game and virtually everyone probably has at least a couple.

In the September issue some of the prices of the games were wrong: Army Moves is a full price game and not £1.99, while Football Manager is now a budget game and 180 is not £9.95! It is of course £1.99.

My Amstrad is called Amy, because she is a little temperamental. What's yours called?

**Jonathan Cale,**
**Exeter, Devon**

***LD:*** *A strange thing happened with the chart prices: They started off as being correct but changed after leaving the editor's word processor. Still, I'll send you a copy of Leviathan as compensation.*

AMSTRAD COMPUTER USER

*Exclusive* READER OFFERS

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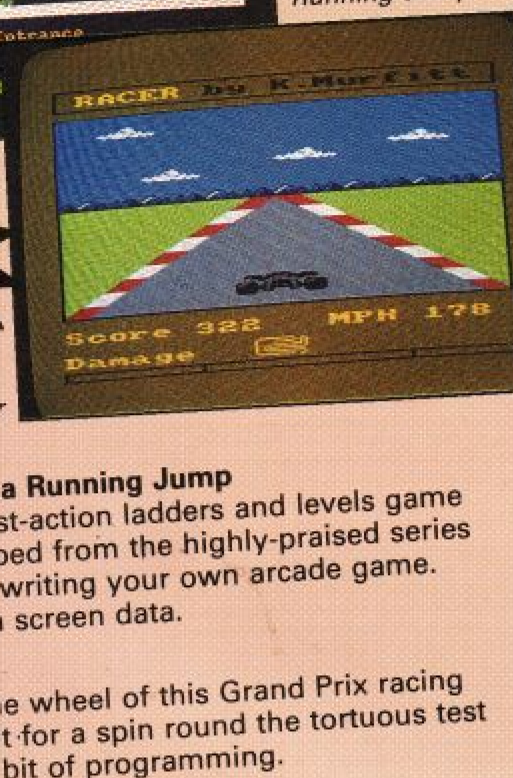
**These two exciting compilations bring together the very best games listings which have helped to make *Amstrad Computer User* the best-selling Amstrad magazine in the country.**

**And we've kept the price right down to thank you our readers, for all your encouragement and support.**

## V·O·L·U·M·E 1




*Roland Takes a Running Jump*




*Racer*

13 GAMES!

**Roland Takes a Running Jump**
A colourful fast-action ladders and levels game which developed from the highly-praised series of articles on writing your own arcade game. Includes extra screen data.

**Racer**
Get behind the wheel of this Grand Prix racing car and take it for a spin round the tortuous test track. A nifty bit of programming.

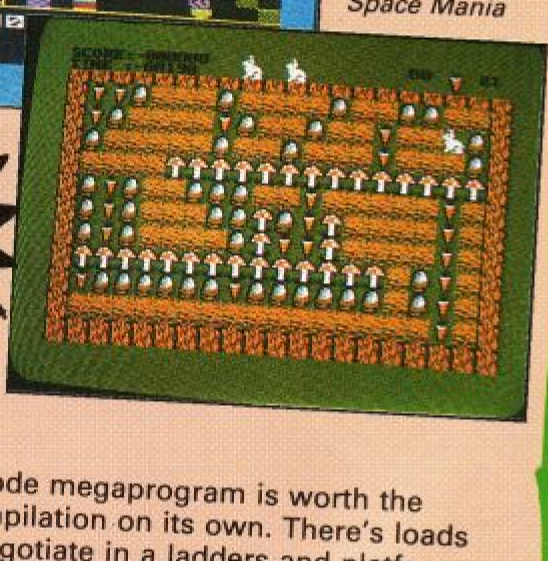
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Life, Electric Eddy, Galaxians' Revenge, Trench Attack, 3D Maze, Missile Attack, Monsters Final Hour, Up the Beanstalk, Amthello, Frantic Freddie and Electric Fencing

## V·O·L·U·M·E 2




*Space Mania*



*Splatch*

20 GAMES!

**Space Mania**
This machine-code megaprogram is worth the price of the compilation on its own. There's loads of screens to negotiate in a ladders and platforms extravaganza.

**Splatch**
Think you've seen this one before? Balderdash, we reply. Help the rabbit get to the carrots, and don't forget to drop an acorn on the squirrels. Great frun for all the family.

PLUS

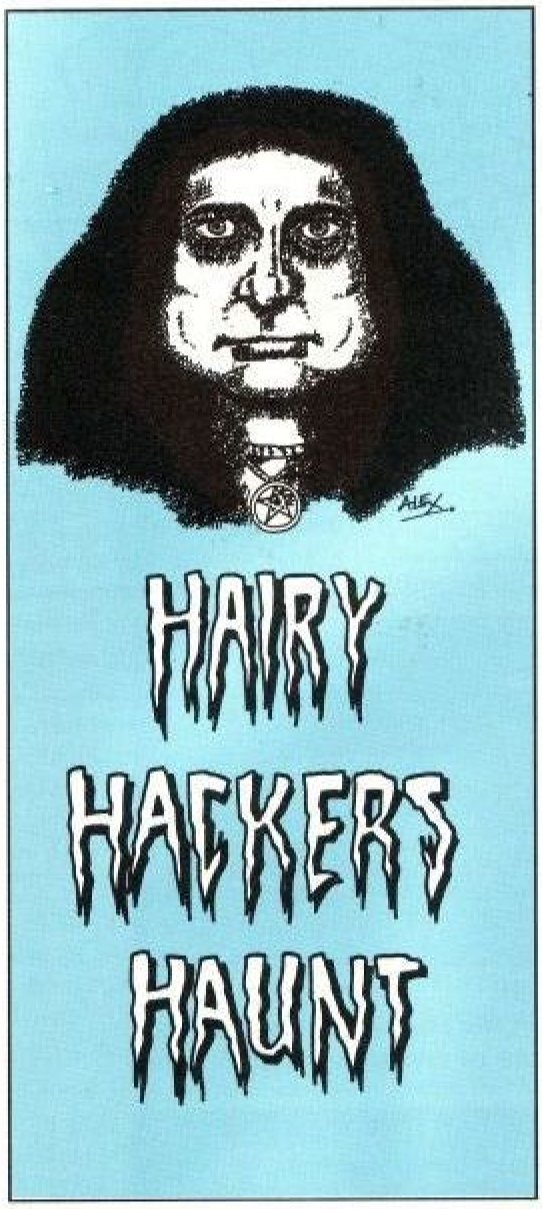
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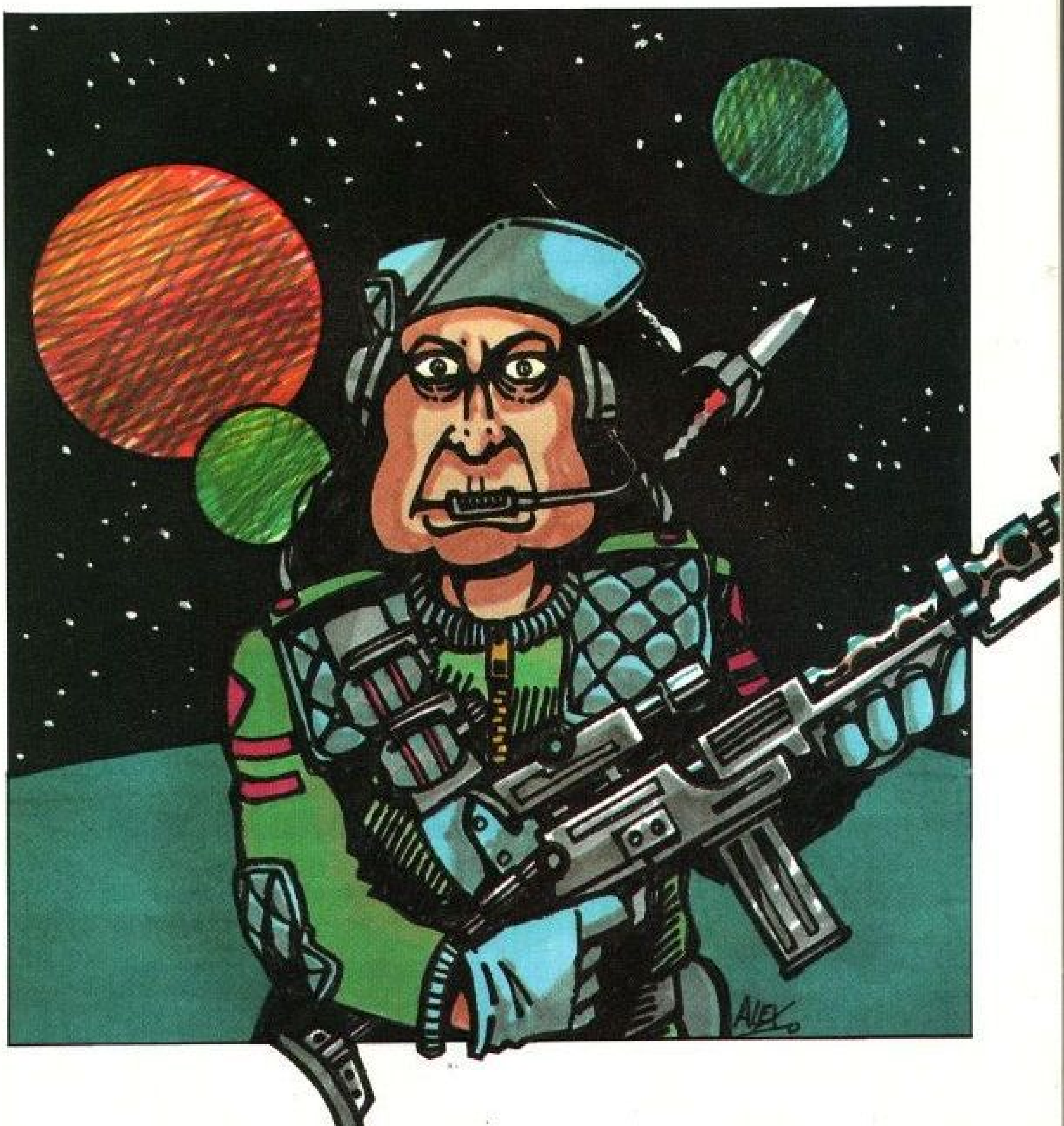
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***To order please use the form on page 71***




# Vax the immortal

**The intrepid band of Vax, Justin and Cliff hack through megabytes of program, seaking for the elixir of life, the sacred DEC (HL), then at last they found . . . infinite lives for Exolon.**

ANOTHER day dawns in the *ACU* camp. The sun rises slowly in the east, spreading a warming glow over the land. Until it's blotted out by the stack of your complaining letters.

Well, we've got one or two bits in the mailbag, one of which has been hiding under a pile of rubble for a month or two. The crumpled communiqué is from Peter Millar, of sunny Aberdeen. He has one of these "Not a lot of people know that, Michael" bits about Grand Prix Simulator.

On the screen that asks you to press Esc to define keys and so on, you type in TRACK G or TRACK F, and you are magically teleported to the track when you start the game. Clever eh ? How did you find out, Pete ?

Jason Anderson of Swansea is also being driven round the bend by Grand Prix Simulator. He says that on screen B you can get stuck on the verge if you go round it before the drone car does. Watch out for that one folks, I would check it out, but our copy seems to have sprouted legs and moved off to somewhere where the coffee tastes better.

Oh yea Jason, in Raid by US Gold, there is no easy way out of the hangar. I think I was the first one in the office to do it, and that was a fluke. The secret seems to be to line yourself up with the hangar doors first, and then accelerate towards it. Trying to do both at the same time inevitably wraps your plane round the door frame. Take your time.

Time for a browse through the directory on Justin's latest disq (Disk ? Disc ? Spell it Disq and wind everybody up).

I hope you can remember the SLIP (Speed Lock Infiltrator Poke) lock-picker routine by Justin Garvanovic, 'cos if you don't then infinite lives, ammo & energy for BOTH parts of Ocean's GAME OVER (tape type) will be lost to you. It knows which half you mean:

PASTE[R]

```
300 DATA 02,01,c3,bc,3a,00,20,fe
310 DATA 66,20,0c,af,32,64,23,32
320 DATA 54,08,32,3f,23,18,0a,af
330 DATA 32,79,21,32,56,08,32,54
340 DATA 21,c3,54,8e
350 DATA "end",17295
```

While using SLIP, you might be

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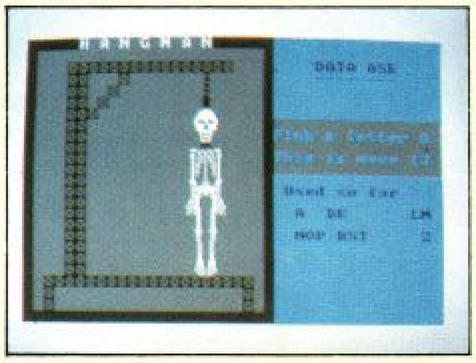

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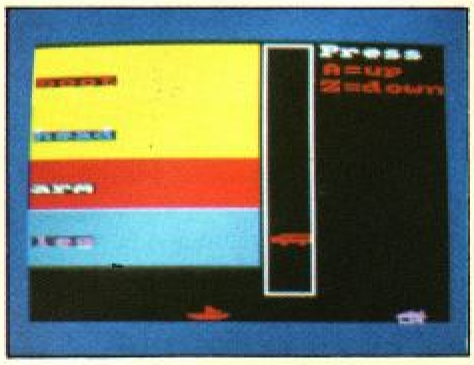

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interested in infinite lives for both combatants in Imagine's Slapfight. Now you can keep it up all night (can I say that in this mag?):

```
300 DATA d1,00,a8,bc,21,00,00,22
310 DATA ca,50,22,cb,50,c3,f5,4e
320 DATA "end",16373
```

Remember Norman's indecipherable squiggle ? Well, the squiggle said "Riches". I know that 'cos he sent in another letter (much more readable) with the following pokeykins for the 4-pack version of Karl's Treasure. A small improvement over the 75-life version of a month or two back. Thanks Norman:

```
10 MEMORY 5000
20 LOAD "KARL.BIN",4096:POKE 24749,0:
CALL 4096
30 REM That wuz inf. lives for Karls
Treasure
```

Public Notice: Proposed site for a listing of infinite lives for Elite's Gurianos (disc), as found on the new Hitpak. Insert disc etc. Yes, there isn't a line 10 and I don't know why:

```
20 MODE 1:MEMORY 12345
30 tot=0
40 FOR n=&90 TO &9F
50 READ a$:a=VAL("&"+a$)
60 POKE n,a:tot=tot+a
70 NEXT n
80 IF tot<>1272 THEN PRINT"ZUT! there
   s a error in the data.":END
90 LOAD "gtd0"
100 CALL &90
110 DATA 21,99,00,22,2D,99,C3,00
120 DATA 98,32,B1,0A,C3,00,01,4a
```

Funny, but I always thought that Gurianos was a South American ball game in which the balls were hit against a brick wall with a stout wooden bat until the prisoner confessed. Never mind. Have the tape version of the same. This is a PASTE[R] one:

```
20 MODE 1:MEMORY 12345
30 tot=0
40 FOR n=&90 TO &9F
50 READ a$:a=VAL("&"+a$)
60 POKE n,a:tot=tot+a
70 NEXT n
80 IF tot<>1296 THEN PRINT"UT! there
is an error in the data.":END
90 LOAD ""
100 CALL &90
110 DATA 21,99,00,22,35,a1,C3,00
120 DATA a0,32,B1,0A,C3,00,01,4a
```

As if the world hadn't learnt its lesson the first time round, they've brought out Airwolf II. Justin has endured it long enough to bring you infinite lives for the disc version of Airwolf 2 as found on Hitpak. Insert disc etc:

```
10 MODE 0:OPENOUT "d":MEMORY 699
20 BORDER 0
30 FOR n=0 TO 15:READ a:INK n,a:NEXT
40 LOAD "!air2.scr",49152
50 LOAD "!aircode
60 POKE 30828,0:MODE 1
70 CALL 26192
80 DATA 00,00,00,26,00,00,06,00
90 DATA 01,02,05,11,14,20,13,10
```

As they brought out a tape version, Justin has his own infinite lives for Airwolf 2. (Also from HITPAK). This one is a PASTE[R] job:

Prizes are currently being considered for those readers that DIDN'T send letters saying "Your 'Feud' map was downside-up!". We know. Probably pasted up by an Australian scalpel-wielder. Any other readers pointing this out will be invited along for a quick game of Gurianos. No ladies need apply.

Now a Justin special for infinite Oxygen, Nitrogen & Air Bottles in Elite's 3DC (As found on Hitpak. Lot of stuff on there). This is special 'cos it is one of the few pokettes that works on both cassette and disc versions. Either PASTE[R] or insert disc and run routine:

```
10 MODE 0:MEMORY 12345:BORDER 0
20 FOR n=0 TO 15:READ i:INK n,i:NEXT
   n
30 PEN 2:tot=0
40 FOR n=&80 TO &BA
50 READ a$:a=VAL("&"+a$)
60 POKE n,a:tot=tot+a
70 NEXT n
80 IF tot<>5482 THEN PRINT"Whoops, Be
   tter check the datalines.":END
90 LOAD "!3dc.scr",49152
100 CALL &80
110 DATA 00,00,02,26,15,06,03,11
120 DATA 01,24,22,18,09,12,13,10
130 DATA 3e,01,cd,6b,bc,21,b5,00
140 DATA 11,00,92,06,05,cd,77,bc
150 DATA 21,00,01,cd,80,bc,30,04
160 DATA 77,23,18,f7,fe,1a,28,f8
170 DATA cd,7a,bc,af,32,a6,28,32
180 DATA a2,0d,32,c9,28,3e,7e,32
190 DATA 4b,28,c3,00,01,41,2e,43
200 DATA 4f,4d,4a
```

## And the Elite saga continues ...

Well, Stephen Roberts of Cardiff, the only way to blast Space Stations, Thargoids and other scum of the universe is to point a mining laser between their eyes and push the button. Unfortunately, while you're doing this, they're doing something else.

David Redwood has sent in a nice follow-up to the Blue Danube bit that plays away in the background. He calls it a "Blue Danubectomy". They cut the Tubas out. Sorry. Anyway the following program may prove interesting if you are the sort of half-crazed visigoth that enjoys spoiling good music:

```
10 REM Perform a Blue Danubectomy on
Elite.
20 OPENOUT "D":MEMORY &5FFF:CLOSEOUT:
LOAD "MUSIQUEX.BIN" :CALL &6000
```

After that, type in POKE &6028,0 to turn the waltz off, POKE &6028,&3A to turn it on, and POKE &6029,&FF for the disco quick- step version.

Enough elitism for one month, now lets see what Justin can do to Mission Genocide when the mood takes him. Not many people know that Mission Genocide was originally called Z.T.B. The name proved unpopular with the moral minority in the marketing department, and a more somber (!!??!) name was stuck upon it. Anyways, ZTB or Mission Genocide, here's infinite lives for the tape version. PASTE[R]:

```
10 MODE 1:MEMORY 12345
20 tot=0
30 FOR n=&BE00 TO &BE1C
40 READ a$:a=VAL("&"+a$)
50 POKE n,a:tot=tot+a
60 NEXT n
70 IF tot<>3531 THEN PRINT"Data error
.":END
80 LOAD ""
90 CALL &BE00
100 DATA F3,3E,C3,21,0F,BE,32,26
110 DATA 86,22,27,86,C3,00,86,11
120 DATA C0,F1,CD,A1,BC,AF,32,C7
130 DATA A0,C3,2C,86,4a
```

Oooh ! A lady. Miss Julie Boot is trying to find the weakness of the monster in Sultans Maze. Sorry, but I never stuck with it for long enough to find out. That was its weakness for me, and most of the Amstrad customer services dept. (who, incidentally, don't just play games all the time. Well, not all of them) .

The following infinite lives for the tape version of Activision's Wonder Boy cheered Justin up no end. You see, hidden inside it was a message to Justin from the programmer. It's nice when things like that happen, Makes you feel wanted. PASTE[R]:

```
5 ' Thanks for the Ego boost Mr Parke
r.
10 MODE 1:MEMORY 12345
20 tot=0
30 FOR n=&BE00 TO &BE27
40 READ a$:a=VAL("&"+a$)
50 POKE n,a:tot=tot+a
60 NEXT n
70 IF tot<>4014 THEN PRINT"Oh Dear, y
ou'd better check the data.":END
80 LOAD ""
90 CALL &BE15
100 DATA 3E,C3,21,0E,BE,32,38,AE
110 DATA 22,39,AE,C3,00,AC,AF,32
120 DATA E2,52,C3,40,00,3E,8F,32
130 DATA 7F,41,3E,B3,32,CC,41,3E
140 DATA F9,32,2C,42,C3,05,40,4a
```

Is the world still in need of Jet Set

Willy II pokes ? If a few of you write in, I'll publish them again. Meanwhile, I've got 'em coming out of my ears. Thanks for the response, folks.

This infinite lives for U.S. Gold's Saracen had a little message tucked on it from Justin saying: "Why hasn't this little game had any push from U.S.Gold? I personally think it's great and it just appears that U.S.Gold hid it so that Gauntlet would get all the limelight, A great shame methinks. So there you have it. Now play it. PASTE [R]:

```
10 MODE 1:MEMORY 12345
20 tot=0
30 FOR n=&BE00 TO &BE3F
40 READ a$:a=VAL("&"+a$)
50 POKE n,a:tot=tot+a
60 NEXT n
70 IF tot<>6525 THEN PRINT"Better che
ck that thou data.":END
80 LOAD ""
90 CALL &BE1D
100 DATA DD,21,00,BF,11,50,00,CD
110 DATA 4E,BC,21,13,BE,22,4E,BF
120 DATA C3,00,BF,AF,32,51,6E,32
130 DATA 4D,7F,C3,40,6C,3E,C3,21
140 DATA 31,BE,32,E2,39,22,E3,39
150 DATA 11,40,00,21,FF,AB,C3,AF
160 DATA 39,3E,BE,21,6D,9B,32,00
170 DATA 02,22,01,02,F3,F1,C9,4a
```



Well, Bob Crawford, your letter has been passed to the Ed for his consideration, but meanwhile here is the response to the rest of the letter:

Justin beat you to the pokes again. No, the word "VAX" does not appear on my pay packet, but the letters KP do. I have tried Labatt, but prefer Theakston's Old Peculiar any day. Yes, the Post Office did eat the paperclip. No, you can't have the copy of "Mud Wrestling for Beginners" as the wife is currently reading it.

Now my favourite game for a long time. Not only great fun to play and write about, but great to play with on the emulator. Exolon. Did you know that an invisible sprite is always being redrawn in the top left corner of the screen ? You notice that when you screw the sprite data up.

Many thanks to Cliff, who spent many minutes cracking this one and many valiant hours with me testing it. Thanks to Justin for the loan of the loader):

```
10 MODE 1:MEMORY 12345:BORDER 0
20 INK 0,0:INK 1,6:INK 2,18:INK 3,26
30 tot=0
40 FOR n=&80 TO &99
50 READ a$:a=VAL("&"+a$)
60 POKE n,a:tot=tot+a
70 NEXT n
80 IF tot<>1674 THEN PRINT"Oh dear. Y
ou'd better check the data.":END
90 LOAD "loader",16384
100 CALL &80
110 DATA 21,89,00,22,53,41,c3,00
120 DATA 40,af,32,59,11,32,7a,1f
130 DATA 32,25,2a,32,25,2b,c3,00
140 DATA 01,4a
```

To round off this month, an apology for a joke: How many Einstein users does it take to change a lightbulb? Both of them.

See y'all, Vax & Suz

**ACU**

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ACU



# GREETINGS

**Thank you for filling in the *ACU* survey form. Simon Rockman takes a look at the results of all your work.**

A FEW months ago you helped *ACU* by filling in a survey form. The results make fascinating reading, even if the main thing they prove is you can't please all of the people all of the time. Perhaps that is because we are such a varied bunch – I say we because I'm a reader as well as a writer.

Looking at the age range, shown in Graph I, we can see a fair spread, with the older readers making up a large percentage. Who says computing is a young man's game? Man? Isn't that a bit sexist? Well the sad statistic is that 95 per cent of our fellow readers are male. Thrust the magazine under your sister's nose, *ACU* doesn't want to be to blame if only half the population is computer literate.

Perhaps you are already doing that. Each copy is read by 2.1 people. That means that there are more 0.1 of a person going around than I thought, and if everyone who reads the magazine bought their own copy the magazine could buy me a Lotus as my next company car.

So how do we spend our money? Graph II shows what computer equipment we have, and it shows what an enthusiastic bunch *ACU* readers are. Over 99 per cent of readers have a CPC, and although a few – less than 10 per cent have another computer everyone seems to be very happy with their Arnold.

The intention to buy column – not pictured in the graph – showed that more people expect their next computer to be an Amstrad than anything else, and even those people who do intend to buy a new machine, be it a 6128, PCW or PC form less than 5 per cent of the readers. The flash 16 bit machines did *very* badly.

Not content with just the 464, over 60 per cent of readers own a printer, and half of those readers who don't yet have a printer intend to buy one. Discs are as popular. Over 54 per cent of us have a CPC with built in disc drive, 17 per cent have a disc on a 464 and a remaining 5.5 per cent intend to buy a DDI-1 add-on, when they become available. That means that over three quarters of us have been enlightened to the wonders of discs.

Other peripherals don't fare quite so well – yet. Under 20 per cent of readers own a modem or a rom board, yet for every one modem owner, two readers want to buy a modem. A similar story is reflected with rom boards, although the difference is less marked.

*ACU* readers are a loyal bunch, they get it regularly. In fact 87 per cent of readers had bought the last three issues, with nigh on 60 per cent having bought all 12 of last year's magazines. No wonder binder sales do so well.

What do we like? Well, this is where things start to get contentious. Graph III shows the topics with three bars for each. The first reflects the percentage of readers who want more of that topic, the second the number who want less and the third the number of readers who are happy with the mix.

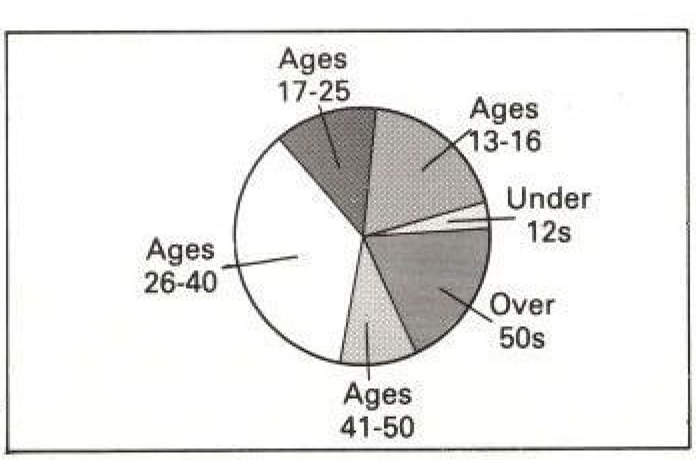
Overall everyone wants more – that's not surprising. What we need to look at is the ratio of more to less. In brief you wanted fewer games reviews, exactly the same number of maps, slightly more on other languages and a good deal more on Basic programming.

I was surprised at the lack of support for fewer program listings. A careful look at the forms shows that one type of reader likes games, maps and program listings, while another type likes reviews, business software and communications.

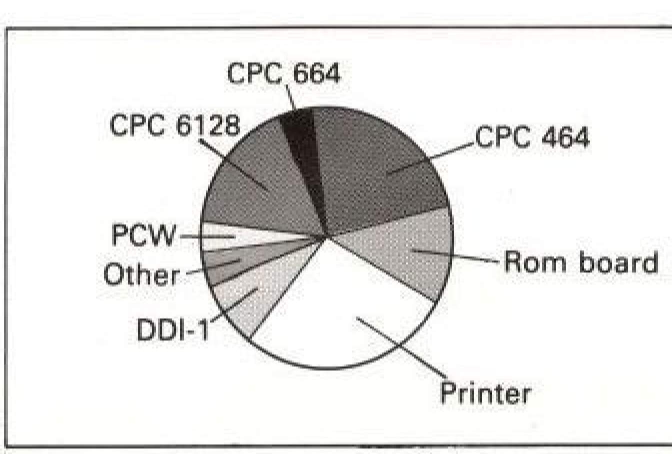
It is difficult to satisfy both schools of thought, but there does seem to be some common ground, notably in the area of programming.

The question about educational software was to some extent a trick question. *ACU* has never carried an article on educational software, so those readers who ticked the "less" box must have strong feelings.

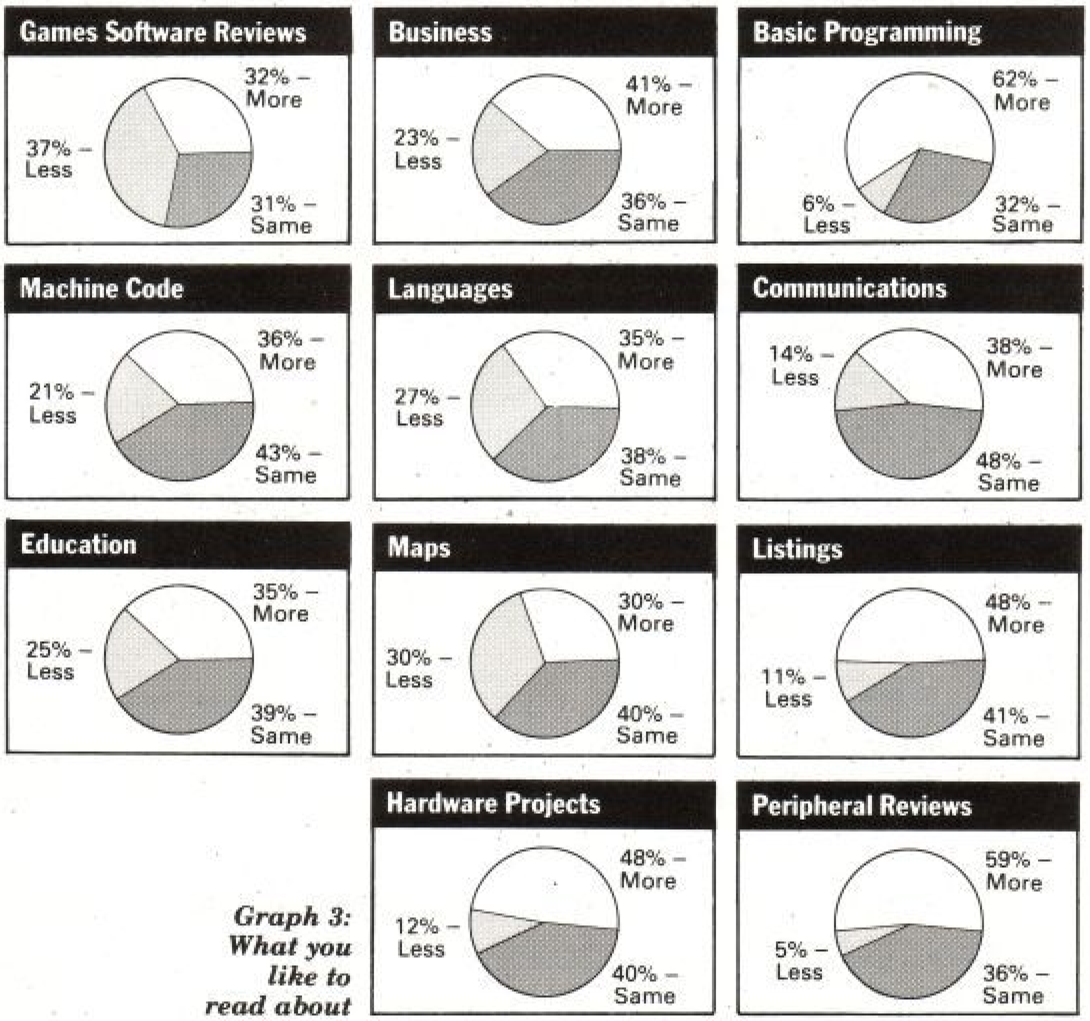
Still an article about educational software is in preparation – it should




***Graph I: The age range of our readers***




***Graph 2: Computer equipment you own***




***Graph 3: What you like to read about***

give you some idea why we have avoided this topic before.

There was strong support for peripheral reviews. We try to review as many peripherals as possible, and by looking at the figures for printer ownership it seems that printer reviews are a popular feature. This month's exclusive review of Amstrad's new LQ 3500 should go down well.

Looking at the software which is used most by *ACU* readers, I can see that Mini Office II is the most popular program, with Tasword not far behind. What is surprising is that these two are more popular than Protext by a factor of three to one.

Among the games, Gauntlet is the most popular, followed by Elite. Kane was the only budget game to make a substantial showing, all the rest being full price. This shows that although budget games sell better it is the full-priced titles which get played the most.

All in all it was a very instructive exercise. You will see some changes from this month onwards, all the result of your suggestions. But don't let it stop there, your views are always welcome, as are articles and listings. And once again, thank you for taking part. **ACU**




# Seek and ye shall find...



WHAT should you pay for a good adventure? Prices of software vary enormously and sometimes it is not easy to see how the cost of the product can be justified. There are many factors to take into account but packaging, development costs, distribution and advertising costs are probably the most significant. A simple cassette box and standard inlay card are cheap. Larger, Rainbird-style boxes packed with goodies and comprehensive instruction books or supporting literature have to bump up the price.

A program written from scratch with a complex operating system and graphics is bound to cost more to produce than a program written using one of the adventure-creation utilities.

Some major outlets have in the past insisted on over 40 percent handling charges. Large advertising campaigns to hype up special products can cost many tens of thousands of pounds. In theory a larger number that are sold could mean a reduction of price to the consumer – but this rarely seems to happen.

Even knowing all the likely costs, it still seems strange that we can have such an enormous difference between the cheapest and most expensive programs. Adventures are very personal things, some you like, some you don't. But at the end of the day nearly all those that YOU like, are going to give you many hours of pleasure per pound spent.

## Total madness

Alternative Software is a new software house to me and having found a couple of their £1.99 gems in my local computer shop I thought you may like to hear about them. Wizbiz and Starwreck are both written by Charles Sharp and I am reliably informed that Charles is normally quite sane. Mind you, he must have been up in the middle of the night at the elderberry wine when he wrote these two, as they are as zany as any adventure games I have played.

Wizbiz is the slightly saner of the two and has you playing the part of a wizard called Ralph. Last night you spent a few happy hours down at the local with some wizard pals. Sadly you had one lager too many and practiced one of your party tricks on one of them. Mike did not take kindly to being changed into a pink and black spotted salamander! When he recovered, you were even the worse for wear and it is not surprising that you remember little of the way in which he transported you to one of his less pleasant dungeons to cool off.

Of course you must get out – who knows what is going on at your pad without you there to keep an eye on things? There is no way you are going to manage this on your own, you had better call on your familiar for help. With that hangover you can barely remember your own name let alone his.

Perhaps a hair of the dog may help, that usually loosens your tongue. It may loosen your memory too. Once you have his help things can start to happen. Of course they may not all be in your favour, but at least it beats rotting in a dungeon.

Wizbiz is written using Incentive's Graphic Adventure Creator, so the general format of graphics and parser are good without being excep-

tional. The text is generally short and to the point, keeping the atmosphere alive until the end. There are lots of objects to find – of which a fair number are red herrings. Unlike some programs where these ruby coloured fish have no purpose, these often appear to be doing something, but are in reality just driving you further up a gum tree.

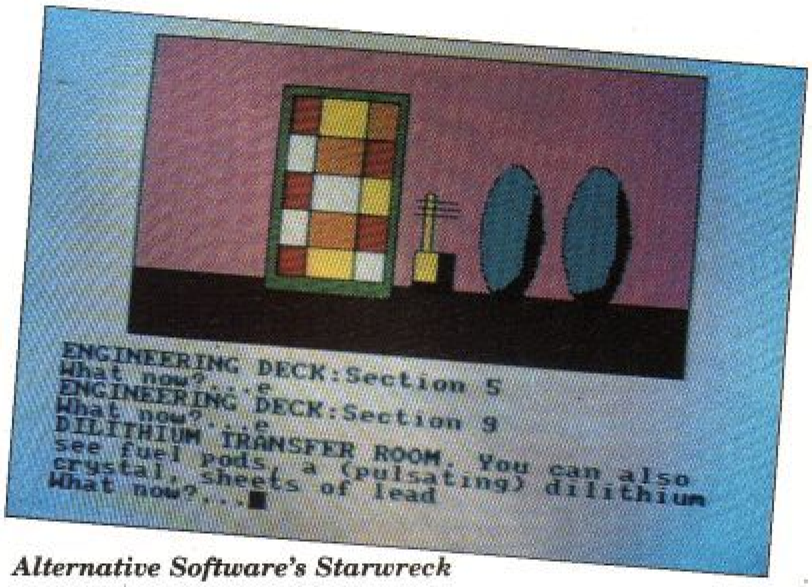
Make maps carefully as there are several pseudo mazes where you could easily get a little confused. At first the puzzles are not so much difficult to solve as hard to find. Examine everything you come across, no matter how mundane the object may appear to be. I found that at first I was ignoring some items because they seemed such simple and everyday objects. Examining them not only gives you more information about the object but also provides clues to potential puzzles.

Although I don't think that you can get killed in this program, it is still a good idea to save the game position fairly often. Not only does this enable you to return to critical locations more easily to try out your latest ideas, but some actions may prove to be more of a hindrance than a help and you may wish you had never tried them.

Wizbiz may not appeal to everyone, you do have to be more than a little crazy to enjoy it fully. If you have even the slightest hint of madness in your family, buy the game – you will enjoy it.

## Where no one else dare go

Starwreck, the second budget title from Alternative Software, is really the story of a disaster looking for somewhere to happen. It is about the happenings aboard the starship Paralysed, of which you, James T Cake are the captain. Your mission would appear to be a simple transport job. You have aboard the Thracian Ambassador and a couple of strange creatures that have to be delivered to a research station. There is also a Krall, a potentially deadly being who lives off other organism's life forces.




*Alternative Software's Starwreck*

Having wandered around the Paralysed for some hours, I am still not too sure what I am trying to attain. I think the whole idea is to encourage the total disaster of the voyage. Constructive actions do not seem to have much effect but destructive actions lead to yet more chaos and general mayhem.

There are a number of objects to find and puzzles to solve, but nowhere near the variety found in Wizbiz. The atmosphere is more aseptic than charged, which I suppose is in keeping with a starship, but I found this more conducive to frustration than excitement.

All your favourite characters are aboard, Mr Spark, Dr Leonard Decoy, Mr Zulu, Mr Checkout and the delectable Lieutenant Yahoo, plus the presumably disposable Ensigns Weevil and Guzunder. A communicator and phaser are at your disposal and a transporter system just begs to be energised.

Again, as with Wizbiz a certain madness will be needed to get the most from this game. I am all in favour of something out of the ordinary and a few more games like these can only help to lighten those



darker moments when the Stock Exchange is failing or the papers can find nothing better to tell us for days on end except Irangate or another secrets exposé.

Just to encourage you (and also to get a few clues myself!), I have some software waiting for the first correct solution to either of these two zany adventures. Write in to Bill Brock at *Amstrad Computer User* with YOUR final solution and the first one will have a pressie in the post – good luck.

## Old but sound

Another cheap adventure that seems to have had little mention in its Amstrad reincarnation is Kentilla, from Mastertronic. This game had good reviews when it was launched on the Spectrum and proved to be not an easy game to conquer. The Amstrad version has been out for some time but little has been done to remind would-be players of its existence.

Nothing is said on the cassette inlay, or at the beginning of the adventure, about the background story or what you are expected to achieve. Death is constantly around the corner and this, together with the uncertainty of your final destination, could well put off many players – especially in such a complex and devious game.

Location descriptions are generally fairly short with any special objects seen, and what happens at that location, displayed in a scrolling window below. There are a number of graphics. These are simplistic and quite small, but keep an eye open for the clues included within the pictures.

Many input commands need only a verb/noun format, although there are a number of occasions where a longer sentence is required. For instance there are several keys to be found, and if you have more than one, you have to specify to which you are referring. Longer inputs are needed to interact with other characters.

Very soon into the adventure you will meet Elva. Having given this character a knife, Elva will follow you everywhere. You can only carry a very limited number of objects, Elva on the other hand must be more than somewhat muscular and can carry many




***Mastertronic's Kentilla***



objects at once. GIVE XXX TO ELVA and SAY TO ELVA "GIVE ME THE XXX" are two of the most common commands you will be using.

You play a hero out of the past and your mission is to destroy the evil Grako across the water. Starting with nothing, you must first find Kentilla, a legendary blade that will return to the hand of its owner on command.

To get to Grako in his Black Tower you must first solve a number of devious puzzles. These involve the manipulation of lots of the objects you will find on your travels.

You will meet several different types of creatures, some of which are hostile and some not – take care not to kill the wrong ones. There are two mazes to solve, one in a forest and one amid swamps. Neither is too difficult if you keep your head and take care with your mapping.

In the forests, keep an eye on Elva and do not leave them until your aid has fashioned a bow and some arrows. You will need to persuade Elva to use them later. In the swamps you will find a lady in distress, save her and she will help you on your way.

Kentilla provides a fairly complex series of interlinked puzzles that must be solved in the right order. With death only a step away at all times, or an incorrect action fouling up your chances of success, it is wise to save your game position at fairly regular intervals. Examine everything you see (sometimes twice to find what you missed the first time!), and look into anything that may hold other items. You may also look east (or any other direction) to see what is in the next location. This Amstrad version varies very slightly from the original Spectrum game but not enough to change what was, and is, a very challenging adventure.

At £1.99 this is well worth spending some time to find – it will also take you some time to solve!

## Expensive but good

Infocom seems to be making up for its problems with the business side by giving us a steady stream of adventures. One that should have seen the light of day in this column some months ago is Moonmist. For one reason or another it has only now come to the top of the pile. A good thing too, as the latest game, The Lurking Horror, has just appeared – so you have that to look forward to in the near future.

Unlike the above games, Infocom ones are far from cheap, and Moonmist (on disc only) will set you back over £29. Only you can answer the question of whether it is over ten times better to play...

Like all Infocom games, the packaging is excellent with several bits of supporting documentation helping set the scene. You play an American private detective whose friend Tamara Lynd has recently become engaged to Lord Jack Tresyllian, and is staying at his castle in Cornwall. Her first letter was long and excited, telling you of her engagement, describing the castle, its resident ghost and some of the people she had met there. Her second letter was even more frenetic, in this she asks for your help because she believes that someone is trying to kill her.

You have always been firm friends and a plea for help just cannot be ignored. You catch almost the first available flight across the Atlantic. On your arrival at the castle gates, you are asked for your title, name and favourite colour. The title determines your sex, your name is what the guests will know you as and your favourite colour will decide which plot you will be acting out.

## Colour keyed

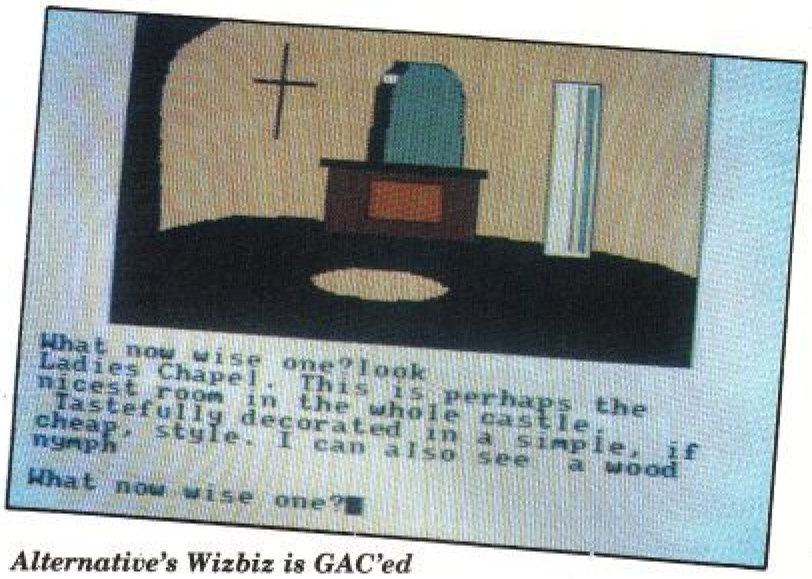
There are four specific plots – red, blue, yellow and green – and each will give you a different adventure with a different story line to follow. Some of the clues, the solution to the mysterious ghost and the castle's hidden treasure will be different. So having solved one adventure you can play another by just changing your colour preference.

Tamara has sent you the guide to the castle that is given to visitors when it is open to the public, so at least you have the basis of a map right from the start. Being old and with walls that thick, it just begs to have the odd secret passage. Could the ghost be travelling that way?

Lord Jack's previous girl friend came to a sticky end by falling down the castle well, and the ghost is said to have a resemblance to her – is there a more scientific answer to these more recent sightings?

Jack's father also died not so long ago, having contracted a strange disease somewhere along the Amazon. Sadly he died before he could pass on the whereabouts of the treasure he is supposed to have hidden in the castle. The Tresyllian finances are shaky to say the least and the finding of this treasure is becoming very necessary.

The adventure is classed as introductory level, so beginners and experts alike should be able to enjoy its puzzles and problems. Like all Infocom games, it makes heavy use of the disc drive and nearly all




*Alternative's Wizbiz is GAC'ed*

commands have the drive whirring away for 20 seconds or so.

I find this a bit of a bore, especially when you also have to type in all commands in full, very few abbreviations being understood. At least in this waiting time you have the chance to re-read some of the best descriptive text you will find in any adventure games

Input commands may be quite complex, although the normal format of verb/noun will be all you need on most occasions. The parser used has improved over the years. It now looks for more in a sentence than most parsers, other than those from Magnetic Scrolls, whose Guild of Thieves and The Pawn are certainly in a position to give Infocom a run for its money.

Complex parsers are all very well, but the more complex they are the greater likelihood of some strange responses. The Infocom system is still not perfect, direction commands may be separated by commas to achieve a series of movements, but link together PUSH SWITCH, W and this will not be understood, SIT DOWN AND EAT DINNER gets the response that "there is a noun missing in that sentence".

There is no doubt that Infocom adventures are among the best in the world, but it is only fair to other software houses to point out that they are not the be all and end all in the adventure world. They have superlative text, excellent plots and puzzles that are both interesting and logical. But they also require all words to be typed in full, take a long time between input and response and sometimes make a hash of understanding what you have typed in. For all that, I would still recommend them to anyone so start saving up now...

ACU

**RATINGS**

| | Wiz-biz | Star-wreck | Ken-tilla | Moon-mist |
|---|---|---|---|---|
| Plot | 68 | 61 | 68 | 80 |
| Atmosphere | 65 | 57 | 74 | 77 |
| Addiction | 65 | 59 | 72 | 80 |
| Difficulty | 72 | 75 | 80 | 72 |
| Overall | 69 | 59 | 71 | 79 |

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# CAGE PAGE

**'AMSTERS Cage is the section on Micronet where users of Amstrad computers can help each other with problems arising from using every kind of Amstrad machine. PAUL NEEDS acts as referee.**

**From MR R SHUFFLEBOTHAM**
**THU 30 JUL 1987 20:30**

Could you please tell me if there is a way of using macros,as depicted in Mastering CP/M (Sybex), with CP/M 2.2? In hacking some of the commands supplied with the disc. I discovered many LIB and MAC Ascii entries. Also, by accident a file called – ????????.LIB – was created. Could you please shed some light on the matter.

**From ANDREW MARGOLIS**
**FRI 31 JUL 1987 18:23**

If Mr. Shufflebotham gets either MAC (from Digital Research) or M80 (from Microsoft) he'll be able to use macros – MAC comes free with CP/M+ on PCWs, and supports macros but not INCLUDES – M80 supports both, but generates REL rather than hex files (so needs a linker) and only allows six character label names.

**From BOB FRANCIS**
**SUN 02 AUG 1987 05:02**

Re: Z80 macro assemblers – there is one in the public domain called ZASM.... Infotel has it, as do most CP/M based BBs..

**From BOB FRANCIS**
**THU 30 JUL 1987 21:59**

As I recall, a TTL monitor will work OK with a 6128 but you will only get eight colours max and they won't correspond to the Amstrad monitor colours – quite a few people have used Beeb monitors and they are TTL.

Problem with "standard" TTL RGB inputs is that there is no such animal. Acorn started all this hassle (I think) with the Beeb. TTL voltage levels depend on whether you are an input or an output pin.

If you're an input low =<0.8v Hi=>2v: if an output, Low=<0.4v, Hi=>2.4v. Giving at least 0.4 volts overlap between i/p and o/p,(hysterisis).

**From MR P A MURPHY**
**SUN 02 AUG 1987 22:08**

To expand the discussion on monitors, I have been successfully using my 6128 with a Philips colour TV which has an RGB socket. Unfortunately my Einstein will not work, although it has an RGB output.

I have since learned that the Einstein is a Linear RGB output so does not work to a TTL monitor. Any of you technical buffs explain the difference between TTl and linear RGB outputs? Any way of interchanging the two?

*I haven't a clue as to what the differences are, but I believe that it can be awkward to interchange without some sort of surgery. Any technobods able to help Pat and myself?*

**From MR T J THOMPSON**
**TUE 04 AUG 1987 00:03**

Regarding the difference between RGB TTL and RGB linear, the TTL treats all signals below 0.4 volts as off (no red, blue or green signal) and anything over 2.4 volts as on (full red, blue or green).

Linear RGB works between 0v and 1.0v and will display shades of the relevant colour depending on the voltage between 0.0 and 1.0V. It is possible to convert an RGB TTL to a linear signal with a few resistors, but the other way (Lin to TTL) requires a handful of transistors.

Not too difficult to do if you're handy with a soldering iron, but not to be recommended to the absolute novice. Elektor did a TTL to Scart converter once (I think).

**From AMSTRAD PLC**
**WED 05 AUG 1987 18:19**

Right, TTL RGB, like TTL logic signals, conforms to the same standard where anything below about 0.5V is OFF and anything above 2.5V is ON. Given three lines which can be in one of two states you have 2^3=8 different colours.

Linear RGB means the RGB lines can take any values between 0 and about 1V. The CPCs drive them at 0, 0.5 and 1 to give OFF, half-ON and full-ON. This means you have three lines (RGB) which can take one of three values so you have 3^3 = 27 different colours.

The 2/4/16 limits on colour of the various modes is nothing to do with this – those limits are set by the number of bits in which each pixels state is stored.

As the picture is scanned the video hardware looks up each stored pixel state in a palette and then sets the RGB lines to one of 27 possibilities.

It is fairly obvious that if you take the TTL RGB output of something like a Spectrum (0..3 or 4V) and pump it into our monitor the system will work, but the ON signals will be too great.

As it happens, the Arnold monitor is pretty forgiving about this and the only "ill effect" is that the picture can be a little bright.

Going the other way, taking Arnold's 0,0.5,1V and pumping it into a TTL RGB monitor it is likely that both the 0.5 and 1 will appear as "ON"s – I know these signals are in theory below the ON threshold but I would guess that the impedance of the TTL inputs accounts for the effect though I don't profess to being a video engineer and I'm sure someone will know the exact reason.

Other reasons why other monitors might not work on the Arnold are to do with the length, level and polarity of the Sync signal. I have certainly seen at least one monitor (an unspeakably expensive Sony) where the SYNC signal had to be inverted.

**From G N RIPPINGALE**
**WED 05 AUG 1987 18:59**

A small contribution to the monitor

debate which has surfaced yet again . . . My Philips CM8533 monitor has RGB linear RGB TTL and a Scart input.

A simple lead plugs from the back of the 6128 into the Scart input on the monitor and supports all 26 colours. It also doubles as a colour TV if connected to the video tuner All you could want for only £300!

*£300?? OK if you have several micros, I suppose!*

**From MR GLYN CARRE'**
**WED 29 JUL 1987 21:18**

COULD anyone tell me that 'CALL' which resets the ink colours to default? I used to know it, but have lost the piece of paper it was written on.

**From BOB FRANCIS**
**THU 30 JUL 1987 22:04**

Re: resetting inks, CALL &BC02 (SCR RESET) will do the job.

**From MR S J DIBBLE**
**FRI 31 JUL 1987 21:29**

I keep seeing interesting adverts for disc drives such as dual 80 track double density, double sided 5¼in drive with Shugart interface, cased no power supply £99 +VAT. Can I hook one of these up to a 6128?

I will be getting Rodos which it would seem can handle such things but I am not sure about other interfacing. Any ideas?

*With Rodos, yes. Otherwise, you'd only be able to use one side of a DS drive, and in 40 track mode only. I use one for archiving stuff on 5.25in – same drive as I use with the Beeb.*

**From MR D DORN(DE TEECHUR)**
**WED 29 JUL 1987 21:52**

Shugart drive – I've got one, and it works. I'll take the back off and check the circuitry, but I'm sure that a microswitch strategically applied to the door to take pin 34 to earth when the drive is ready will do the trick.

**From BOB FRANCIS**
**THU 30 JUL 1987 22:16**

Thanks to Dave Dorn for offer of help with the drive. Drive is indeed a Shugart (400L). Any other help welcome!

**From BOB FRANCIS**
**FRI 31 JUL 1987 23:22**

Dave Dorn's mentioning that he had a microswitch on the drive's front door got me thinking . . . several minutes later when I recovered, I realised that I needed to ground the ready line BEFORE booting the CPC. Ten mins fiddling with the DIP switches, and hey presto..one working 5.25in drive.

And yes you can use a DSDD 80 track disc on a 6128 – but in CP/M+ only – you can patch the extended disc parameter block to do so – and give yourself 128 directory entries . . . haven't tried it yet (no cash!) but details were in the CP/M U.G. Journal (and is in a text file on Infotel.

Now, can anyone help me with my next little project . . . I want to build a V22bis smart modem from two cocoa tins, three rubber bands and a World War Two surplus field telephone . . . snag is, having built it, I seem to have two valves left over: anyone any idea what I can do with them, I did ring Blue Peter but they thought I was trying to fiddle a badge out of them and hung up.

*You need some sticky-back plastic and a corn-flakes packet. That's where the valves go!*

**From BOB FRANCIS**
**TUE 04 AUG 1987 02:01**

Ah yes, if anyone is having troubles with a 5.25in drive – I found I had to set the head step time to 24 milliseconds to get reliable usage – in AMSDOS, just call SETUP DISC (CTRL-B) via KL FIND COMMAND and LOW:FAR CALL with HL pointing to a parameter block as described in the firmware manual.

For CP/M 2.2, SETUP. COM will do it and for CP/M Plus, a short proggy similar to the AMSDOS one but using the BIOS function USERF does the trick.

*Ah, of course! Cheers Bob!*

**From AMSTRAD PLC**
**TUE 04 AUG 1987 18:33**

Head stepping time for SLOW 5.25 (close) drives can be changed in AMSDOS and 2.2 using the SETUP DISC call at BE83 (although it must be called by the "usual" methods – RSX CTRL B in AMSDOS). In CP/M Plus the effect is achieved with the extended BIOS call DD SETUP at offset 0083h. If you need more details I can advise!

**From REV B W TOMLINSON**
**SAT 01 AUG 1987 22:15**

Help! I use Cambase and religiously copy my 8512 b: drive disc after use. Tonight I find that tracks 153-159 are corrupted and I wrecked the copy disc by having to stop disckit halfway through. Dir shows the files OK – how can I copy a 378K file without using disckit? – or LS2? Suggestions welcome please!

NB I'm no great hacker, so keep it simple. Signed, Barry.

*You have a problem. The directory is ok but that doesn't mean that the files are. Can anyone suggest anything?*

**From AMSTRAD PLC**
**MON 03 AUG 1987 18:05**

If no one comes up with a clever solution (and I can't think of a way to do it offhand), then Rev Tomlinson could send me the disc as I have the technology to copy files from 720k to 720k using PIP (which you can't do on an 8512 cause one drive is 180k and the other 720k and you can't use "logical" drives when B: is installed).

**From REV B W TOMLINSON**

Re: the dud 'b' drive – I said a prayer (can help!) and opened up my disc drive. The head was bent out at an angle. Have straightened it and retrieved the file – all now working well and new backups made. Thanks for all helpful tips, and especially to Cliff for his kind offer of help.

*Glad to hear you got it back ok! Wonder how the head got bent??*

**From MR S J DIBBLE**
**WED 05 AUG 1987 22:13**

How many of you out there got DK 'T's real time clock ?..Well if you have take a word of advice. Don't use the POKERTC command on addresses 10,11,12,or 13. I was playing around with that tonight and disabled the clock somehow. In the end I had to open it, unsolder the battery and remove it so the clock reset. A lot of messing around, and not worth it.

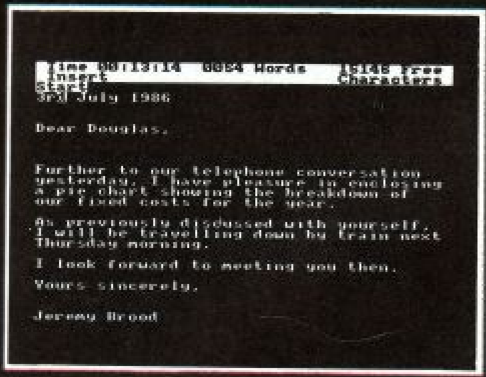
One other thing,try the POKERTC and PEEKRTC on any other address over 9. If the computer crashes you have an early version of the s/w as there is a bug in it. I found this and have corrected it in my version and assume DK have done like wise.

For those who want to know, the bug is in the section of the code which sets return values. A POP instruction is missing and for any address over 9 two bytes of junk are left sitting on the stack so when the program does a RET it gets a nasty shock. I hope this gets you near enough, but if not mbx me and I will try to help further. The alternative is to contact DK.

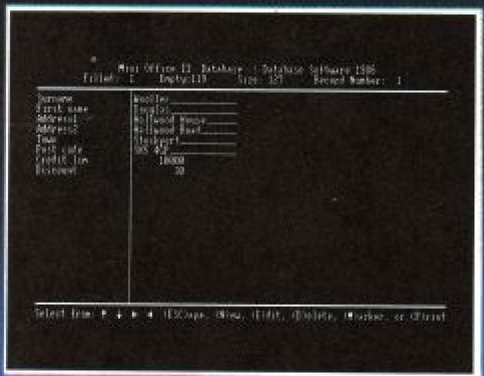
*Thanks Steve! I understand that, and I'm a self-confessed "code idiot"!*

ACU

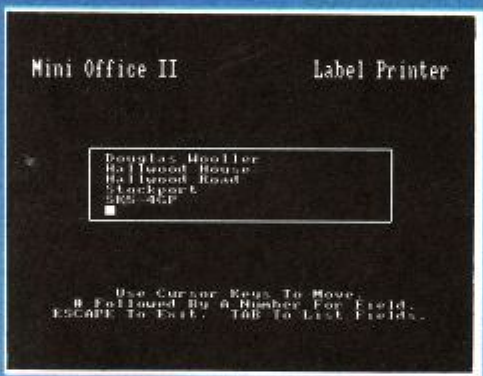
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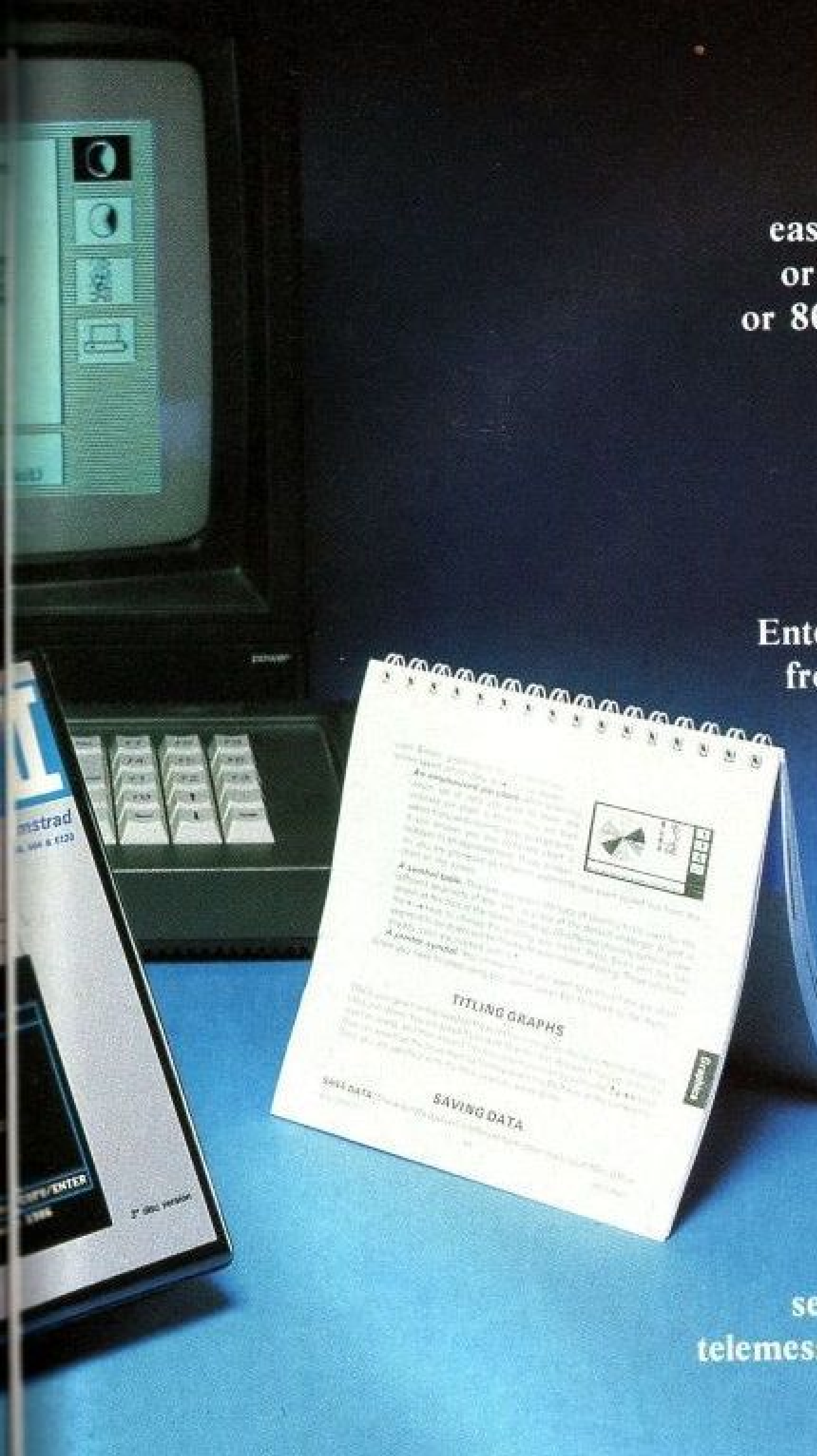
Yet possibly the best advertisement for Mini Office II is that it comes from the same stable that produced the original Mini Office package back in 1984.

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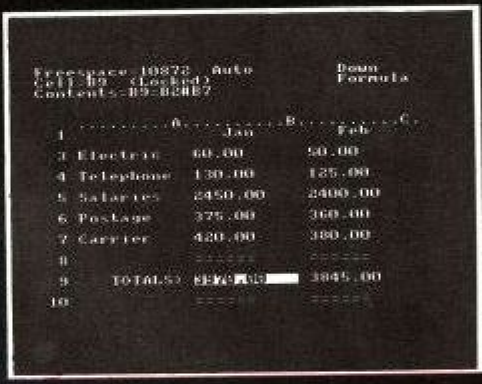
*This is the package thousands of Amstrad owners have been waiting for – and at a price everyone can afford!*

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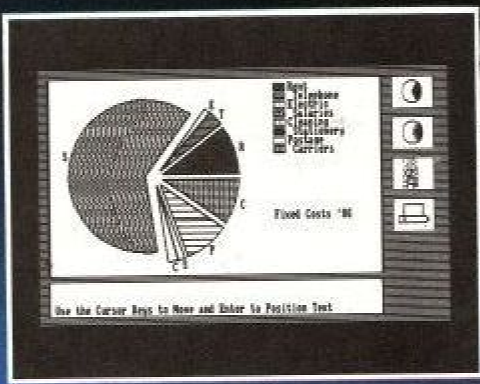
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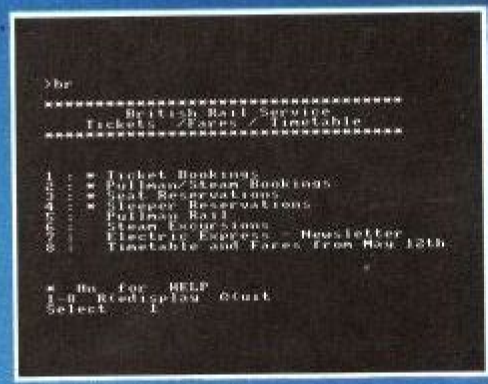

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# Out of the dumps

## Harri Seldon reviews Amstrad's new LQ3500

AMSTRAD has a reputation for giving products really interesting and useful names. The LQ3500 keeps this tradition, but brings more initials on to the scene. The last series of printers were called something like DMPxxxx (pronounced "dump"). Now, the prefix is "LQ", like the old Epson range. The "LQ" part stands for Letter Quality, and it isn't kidding. This is one of those fancy machines carrying 24 pins on the print head. Every single one is used for the characters, and underlining is done on a separate pass.

The really clever bit is that the letter quality print strolls off the roller at about 55 characters per second bi-directional.

Probably the most familiar LQ dot matrix printer that you could compare it to is the Joyce (PCW 8256, code named Joyce after Alan Sugar's secretary). Comparing it with the rest of the DMP range would be difficult, as they are flatbed design, and the LQ3500 is a more conventional printer.

Why the change from flatbed designs? I don't know. Perhaps the whole concept of a flatbed printer was a bit too novel for people who are now in management positions, but took their computing degree six years ago. More likely, though, only a limited number of 24 pin heads are available, and none fitted on a flatbed chassis. I think that flatbed printers are a great idea.

The LQ3500 prints out much better, and much faster than the Joyce or the DMP series, anyway. It's print quality is getting on for about as good as you could persuade a matrix printer to be, and all on the one pass yet.

The difference in quality is achieved, not by going over the same line twice, but by packing in more dots per inch on one pass.

As the print head does not need to shuffle back to the start of the line each time, letter quality printing is much faster than on the older printers.

So much for print quality, what about other uses ? Well, it goes like the clappers in draft mode. Not needing to put quite so many dots in the inch, it belts out text at about 160 characters a second, but slows down noticeably when you start mixing in italic characters.

This draft mode text looks very angular. It is legible, but it wouldn't win any awards for calligraphy.

To the outside world it looks like an Epson LQ1500, which is a shame as they stopped making them about 18 months ago. It is, however, as near to a standard as you are going to get, and it's a darned sight better than inventing your own standard.

As a sideline, it also looks like an IBM printer. There are three character sets: Epson (with international variations, IBM 1, and IBM 2. The difference between the two IBM sets is that number one interprets the first 32 characters in the second half of the character set as being control codes.

The unusual bit about the IBM sets is that the double lined graphics are really double lined. This may sound a bit daft, but for some strange reason not many IBM-compatible printers actually have IBM-compatible graphics.

In common with other printers, the graphics characters are produced in two passes, and don't quite join up unless you make the machine print only in one direction. Curiously, it does not seem possible to select IBM set 2 from the DIP switches on the back.

That's a point, the DIP (Dual In-line Package, for those who haven't heard yet) switches are relative easy to reach. They're hidden round the back, but you don't need to take the printer apart to get to them. In fact, all you need is a biro with which to poke at them.

The printer coped well with screen dumps from a PC1512 using the shaded version of the Graphics program, though it did look a little faint. This is because only every third pin on the head is used when doing 8 bit graphics dumps.

When in high resolution 24 bit mode all pins are used, but overheating becomes a problem. After about 12 lines of ***black,*** a self-protection feature stops the print head for a while to let it cool off. It only needs a few seconds break, to stop it from vanishing in a puff of smoke.

On the front you will notice four buttons, in the manner of the DMP4000. These are labelled ON LINE,MODE,FF and LF. You probably know what most of them do, but the mode button allows fine feeding of paper, and also lets you feed paper backwards.

It is also possible to set either draft or LQ (it's no longer called near letter quality) modes with the FF and LF buttons. It peeps twice when you set LQ, and once for draft mode.

Another feature on this machine that I liked was the hex dump. Not many people use this, but when your program doesn't drive the printer properly. a hex dump of what you are sending to the printer comes in very handy.

The usual problem is finding out what part of the hex dump is the part that you are interested in. But, with this printer this proves no problem as the hex dump has a character dump by the side of it, much like a debugger program.

Everybody wants to know about buffers, so you'll want to know that the LQ3500 has a 7k one. This doesn't sound a lot, but this is the real size of the buffer, having taken into account

Turn to Page 40 ▶

AMSTRAD LQ 3500 Printer

AMSTRAD

This demonstration page shows the range and style of characters available on the printer, together with a few examples of graphics. We cannot show here all the facilities available on the printer, but this ought to give you a fairly good idea of what it's capable of.

A very large range of special characters is provided in order to produce such effects as: «Naïve» «Française» «München» «Mañana» «6¾» «30°C» «πr²» «21 Ån» «24÷7≈3·14» «Ω≥Σ»

..... as well as $^{superscripts}$ and $_{subscripts}$ with *italics*, **bold and double-strike** underlines etc.

There are, in fact, just over 200 different characters available, covering a wide range of European Languages (as well as Greek) and a wide selection of mathematical and currency symbols (including the simultaneous availability of £, #, Pt, ƒ, $, ¢ and ¥).

This is in 17 pitch
This is in PS pitch
This is in 12 (elite) pitch
This is in 10 (pica) pitch
This is in 17D (8½) pitch
This is in 12D (6) pitch
This is in 10D (5) pitch

You don't need to use $\int_{-\infty}^{+\infty} \Gamma \cdot \surd \alpha^n \cdot dx$ to work out that this is clever.

In fact, it's just like Epson and IBM printers rolled into one, price tag excepted of course.

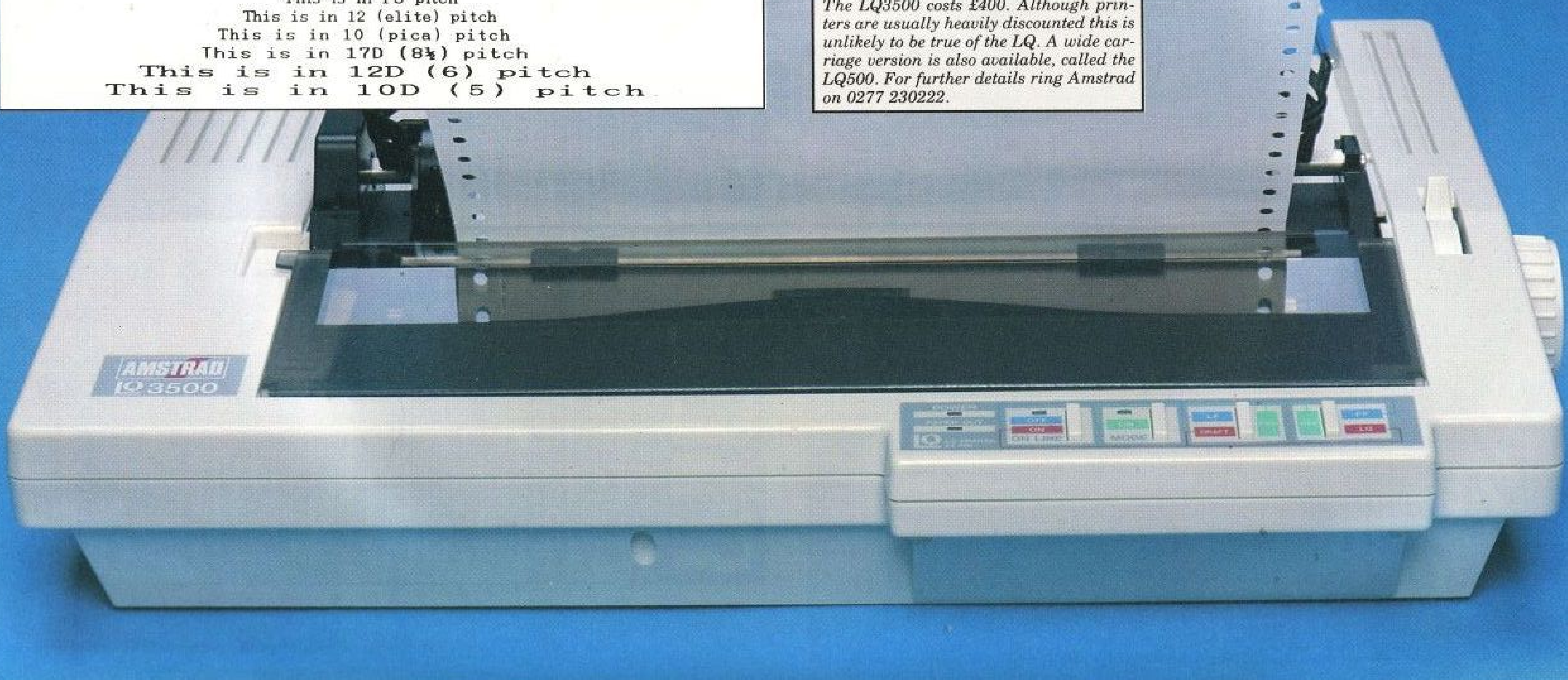
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Φ This example document was printed, including this footnote, using an Amstrad LQ 3500 printer.
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*The LQ3500 costs £400. Although printers are usually heavily discounted this is unlikely to be true of the LQ. A wide carriage version is also available, called the LQ500. For further details ring Amstrad on 0277 230222.*



◀ From Page 39

the memory used by the printer itself, downloaded characters and so forth.

The buffer is managed well, even while the machine is printing graphics, and so gives the appearance of being bigger than it really is.

Where this printer falls down is on paper feeding. The idea is sound enough. Put your paper in a slot in the top, pull lever to lift bail bar, and paper whizzes through the mechanism on its own like it does on a Joyce or Seikosha.

In a perfect world this would be fine. Unfortunately, if you wind the paper back a bit for that extra long document, and just happen to wind it back too far, you are in trouble.

Pulling the bail bar back a second time STILL makes it automatically paper feed. The paper then feeds up and crumples into the lid. The simple expedient of checking the paper sensor before feeding the paper would have prevented this, and I am surprised that it wasn't done.

After a sheet of paper has been sitting in any printer, it gets a curve ironed into it. This tends to wreak havoc by feeding itself back into the mechanism. On the LQ3500, the plastic guide is supposed to fix this, and does to some extent, but the paper still sometimes ends up blocking the incoming paper.

I found the lid to be about as useful as an ashtray on a motorbike, and tended to leave the thing off anyway. It's not really that noisy a printer, so it didn't matter that much.

The tractor feed mechanism looks a wee bit flimsy. There is a warning in the manual to the effect that you shouldn't rip it out by the metal bits – or else. We haven't managed to break ours, and it does correctly fulfil its role of feeding tractor paper through the printer.

Paper is still held under slight tension by the roller, even when the tractor feed is being used. In fact, there does not seem to be any way at all of releasing the paper pressure, not that its that great to begin with.

The other bits in the box are a kit-of-parts for a separator (to stop the amazing self-feeding printer syndrome), a ribbon, an IBM-type printer lead, and a manual.

The ribbon is the same one that fits into the Joyce, so spares should not be a problem. Fitting them is fairly painless and ink-free. Mind you, Joyce ribbons seem to go on forever (I've used the same one for about a year now) so you shouldn't need to change it too often unless you work for the Encyclopedia Britannica or somesuch. You can use the new carbon ribbons which give a blacker image, but they do smudge the paper.

The manual is a slight improvement on the old one, and no longer contains 25 pages on how to unpack the printer, followed by five pages for everything else. It explains things from the average punter's point of view, and is therefore a bit short on really technical content. But I say who wires up their own Centronics leads anyway? The manual is at least written in English, not Japanese or Japlish, and should prove adequate for most people.

So who is going to buy this printer ? I suppose anyone who needs decent output, and high speed draft copies (the ed does this with a 300 cps matrix printer, a daisywheel, and a lot of floor space).

I can see quite a few of these being used as second printers on 9512s. The draft speed is very high, and it would make sense to spool off draft copies on an LQ3500 rather that the daisywheel.

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The 8th official

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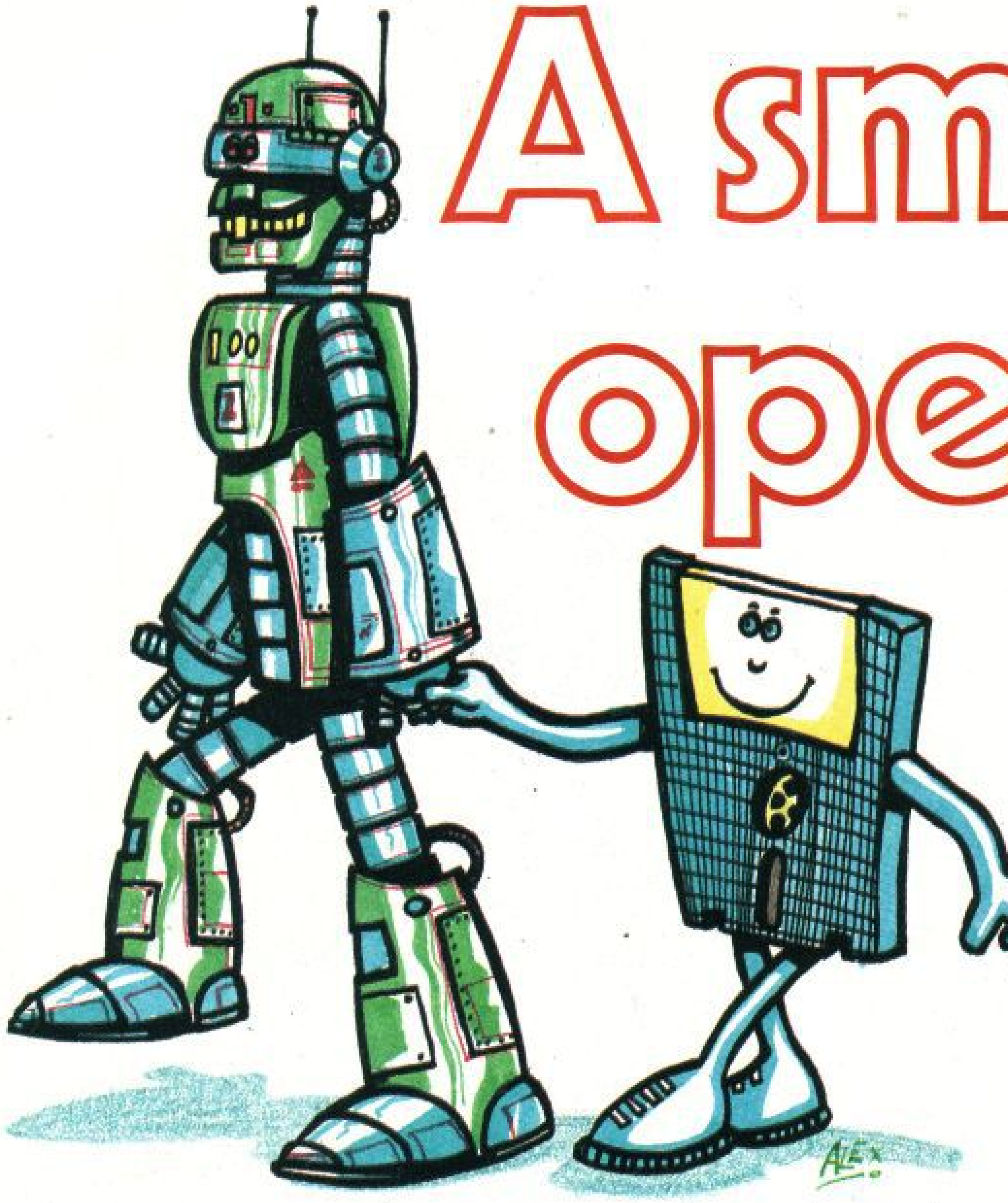
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# A smooth operator



**Jeff Walker reviews the RoDos System from Romantic Robot**

RODOS is a Disc Operating System. More specifically, it is an alternative disc operating system for the Amstrad CPC range of computers.

RECS is a rom extended command system, or in plain English, another bunch of RSXs that cut the sweat out of doing difficult jobs. RoDos and Recs together are known as "The RoDos System".

Just like the other alternative operating system we all know and love, namely CP/M (yawn), RoDos needs specially formatted discs to work with. Unlike CP/M (yawn), but like Amsdos, RoDos comes on a 16k rom with all the extra commands built-in. The thing to remember after inserting this silicon spider into your rom box is that it strangles Amsdos and completely takes over your machine.

## Compatibility questions

Now that may sound obvious, but when you're using Amstrad IBM, Vendor, or Data formatted discs, RoDos does a quick costume change and starts acting just like Amsdos. So,in theory, RoDos is compatible with,but completely transparent to, the Amsdos disc user. In practice, however, you may have to disable the RoDos rom in order to run some commercial software.

I found, for example, Mini Office II didn't like it. Neither did Cherry Paint nor Hisoft Pascal. To get the latter to compile without crashing, RoDos had to be surgically removed from my Superpower rom box, but usually a |ZAP,x (where x is the number of the slot you've used for RoDos) is all that's needed.

I would estimate that about 85 per cent of software currently available for the Amstrad CPC will be unaffected by RoDos, or indeed any sideways rom.

I found that a commercial game (Trans-Atlantic Balloon Challenge) protected by one of the latest Speedlock disc protection systems ran perfectly with RoDos initialised, but any game that re-initialises all roms on running, like GAC adventures for example, will probably do strange things before eventually crashing. Note that these sort of games will crash with any external roms fitted, not just RoDos.

Another slight hitch is rom incompatibility. Sideways roms are notorious for this, and it's true that some roms just don't like working with others.

I found that Utopia, Protext, Promerge Plus, Maxam and BCPL were mostly unaffected with RoDos initialised. I say "mostly" because RoDos had some strange effects on the Utopia |FIND, |HELP and |COPY commands, and Protext went on a go-slow as far as loading and saving files was concerned. I hope these idiosyncrasies will be cured in later versions.

## Getting started

To make the most of the system you must use RoDos formatted discs. Formatting is quick, and very simple: |FORMAT on its own does the job, but you can follow the command with up to 4 parameters if you like. The syntax is shown in Figure I.

RoDos is very versatile. For a start, it can format, read from, and save to, 3.5in or 5.25in drives. It will even let you read, to an extent, discs formatted under a different operating system such as MSDos – as long as you've got a proper drive fitted, of course.

It will also format any extra banks of memory you have, which then become

drive C. On a 6128 this gives you a 62.5k silicon disc to play with, but |FORMAT,2,8 will automatically format all of your unused banks of memory.

The size of the silicon disc depends entirely on how much ram you've got hanging off the back of your machine, be it 464, 664 or 6128. And if you don't want to format all your unused memory you can specify how many tracks to format.

Playing with the 'track' parameter can do weird things to CF2 discs. RoDos will quite happily accept a parameter of over 40 and proceed to format the disc. A parameter of 80 results in 400k free under RoDos format. You haven't really got all this disc space, and trying to write to it will result in a "Disc corrupted" message when you try to write past track 40, or thereabouts. The track parameter is best forgotten when formatting discs; by default RoDos will format as many tracks as it legally can.

RoDos formatted CF2 discs use an extra sector per track, and as each track holds 5K of data you've got 200K free, minus half a K for the original, and each subsequent, directory entry.

## What now?

Once you've RoDos formatted a disc you can enjoy the luxuries of setting up lots of directories and sub-directories. These are a little like the user sections under AmsDOS, but far easier to structure and manipulate.

Each directory is given a name, allowing you to sort your disc into orderly groups of similar files. You can name as many directories as you like, and each directory can contain as many files as you like. No more are we restricted to 64 files per disc; with RoDos the only restriction is disc space. Before setting up your directories, however, it is a good idea to give your disc a title. RoDos disc titles can be up to 16 characters long, and can also include control characters. So:

```
TITLE,CHR$(4)+CHR$(2)+'Games Disc
1'+CHR$(1Ø)
```

would clear the screen to Mode 2 before printing the disc title, Games Disc 1, followed by a linefeed and the directory when either CAT or DIR is used. Let's say we've named our disc as above, and by way of a simple example we've arranged our disc so that Adventures, Arcades, and Strategies are each kept in their relevant directories of the same name. The result of this is shown in Figure II.

If we wanted a directory of all the adventures on our disc we would enter: |DIR,"adventures/". The slash at the end lets RoDos know that we're talking about a directory here, not a filename. We could even split the adventures directory into further sub-directories, say text and graphical. |DIR-,"adventures/" produce something like Figure III.

```
|FORMAT, type, drive number, tracks, sides
                                             1 or 2
                                       1 to 80
 0 = IBM
 1 = Vendor
 2 = RODOS              0 = Drive A
 3 = Data               1 = Drive B
                        8 = silicon disc
                 9 to 255 = Extra external drives
```

***Figure I: RoDos Format command***

```
Drive: A                           signifies entry is a
Games Disc 1                       directory, not a file

adventures        Dir
arcades           Dir <-----------------
strategies        Dir
Bytes Free = 003.5K
```

***Figure II: Structured directories***

```
Drive: A
Games Disc 1

text              Dir
graphical         Dir
Bytes Free = 003.5K
```

***Fig III: Sub/sub directories***

```
Drive: A                      file
Games Disc 1                  attributes

hobbit               RW
seabase              RW <------
Bytes Free = 003.5 K
```

***Figure IV***

So to get a directory of all the graphical adventures on our disc we would enter: |DIR,"adventures/graphical/" which would result in something like Figure IV

The slash between the two directories in the DIR command line is known as a "path". It lets you fly around your disc following logical paths through directories and sub-directories.

To load or run a file you prefix its name with the directory path: RUN "/adventures/graphical/hobbit". Alternatively you could set "graphical" to be the current directory with: |CD,"/adventures/graphical", and then just RUN "hobbit". The directory name ".." has a special meaning. It stands for the "parent" directory, in other words the one "above" the current one.

If we were currently in graphical then ".." would be adventures. If we wanted to get into text from graphical in a hurry then: |CD,"../text", which translates to "move up 1, then go into text", would do the trick. The name "/" on its own corresponds to the one and only directory you get when you |DIR an AmsDOS disc, and is known as the 'root' directory. |CD,"/" will always set the current directory to the root.

RoDos filenames and directory names can be up to 16 characters long, and are case-sensitive. Text, TEXT, text, and TeXt are all different names unless you use RoDos's OPT command to switch case sensitivity off.

The directory management commands, then, are the heart of The RoDos System. But they are by no means all you get.

## Romantic frills

In total RoDos and Recs set up over 50 extra commands. Some of them are very powerful, most of them are very useful, and a few just duplicate AmsDOS commands.

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mands is |EXEC. This executes a "command file" and is analogous to the SUBMIT command in CP/M (yawn).

A RoDos command file is an Ascii file whose purpose is to set up your system in a particular way on execution of the command: |EXEC,"filename". A typical command file could look something like Figure V.

Any line in the file starting with a bar character is sent to RoDos's command line interpreter. All other lines are sent to the screen.

So what's this command line interpreter? Well, 464 owners will love it because it rids you of the need to pass parameters to RSXs as string variables, and 664/6128 owners will love it because there's also no need to enclose strings in quotes.

Entering CLI gets you a bar prompt. You then type in the command plus any parameters needed. For example, after entering CLI:

```
REN newfile oldfile
ERA *.BAK
LIST textfile
```

Another nice one is |DO. How many times have you written a program like this:

```
10 INPUT a$
20 IF a$="CAT" THEN CAT
30 IF a$="TAPE" THEN TAPE
40 IF a$="DISC" THEN DISC
50 etc...
```

Using |DO you could simply write: 10 INPUT a$:|DO,@a$. The |DO command will even accept parameters with the RSX.

But the perhaps most powerful two commands at your disposal are READSECT and WRITESECT. The first allows you to read a physical sector from any disc into memory, even a 3.5 or 5.25in disc formatted under another operating system such as MSDOS. WRITESECT lets you write physical sectors to any disc.

Together these two commands should enable you to copy, say, something from a MSdos formatted 5.25in disc onto a Amsdos formatted 3in disc. Of course, you'll need to have the relevant drives fitted and know how each drive works; RoDos only supplies you with the raw tools to do the job.

```
100 ' Example program using READSEC
T and WRITESECT to
110 ' copy a whole disc from Drive
A to Drive B.
120 '
130 ' For the purposes of this examp
le, both discs
140 ' must be the same format.
150 '
160 INK 3,20
170 first.sector=&C1 '&C1=data, &41=sys-
tem, &81=rodos
180 last.sector=first.sector+8 '+9 f
or rodos
190 '
200 PRINT:PRINT"Insert SOURCE disc i
n Drive A"
210 PRINT"Insert DESTINATION disc in
 Drive B"
220 PRINT:PRINT"Press Y to copy, any
other to abort: ";
230 in$=UPPER$(INKEY$):IF in$=""THEN
 230
240 IF in$<>"Y"THEN 400 ELSE PRINT in
$;
250 '
260 A
270 '
280 PRINT:PRINT:PRINT"Copying Track:&
Sector:&";
290 row=VPOS(#0):PEN 3
300 FOR sector=first.sector TO last.se
ctor
330 LOCATE 27,row:PRINT HEX$(sector);
340 READSECT,&8000,0,track,sector
350 WRITESECT,&8000,1,track,sector
360 NEXT sector
370 NEXT track
380 '
390 PEN 1:PRINT:PRINT"Copy completed"
:END
400 PRINT:PRINT"Copy aborted":END
```

Another nice command is ALIAS which enables you to customise bar commands to suit your mood. For example:

```
|ALIAS,"HELLO","EXECstartup"
```

would make |HELLO execute the command file named "startup". |LOAD and |SAVE let you load and save files to and from banks of extra memory as well as normal ram. With |BGET and |BPUT you can get or put single bytes from or to an open file.

|ACCESS lets you set the file protection attributes to read-only, write-only, go-away-and-get-permission, or any permutation of the three.

Lastly – and this is my favourite – when you first switch on RoDos will look for a file called DISC and run it if it finds one. No need to touch a key – simply insert your disc while your roms are signing-on and away it goes. I must be getting lazy in my old age.

## Conclusion

The manual supplied with RoDos is messy, very short, and painfully lacking in realistic examples. Documentation these days is a major selling point, and in an effort to cut costs. Romantic Robot may have cut their own throats here.

However, the system is very robust and stands up well to the what-if-I-do-this style of experimentation. There are those who would argue that this is the best way to get to know a piece of software anyway.

And help will be arriving soon, I hear, in the form of an "example" disc which will have, among other things, a disc-doctor on it – and there is a "technical" manual planned as well. Both of these, however, will set you back a few bob more.

On the upgrade front, hopefully coming soon will be a |COPY command to allow file-copying between drives, and a random access system, including the means to have more than one file open at any one time.

RoDos is undoubtedly a real alternative to Amsdos, and, with the promised random access, a possible alternative to CP/M (yawn) too. Its named directories filing system is far superior, and very easy to get used to.

A silicon disc is one of those things that you can't live without once you've got one, and the fact that it will work with proper disc drives, and lots of them – you can have up to 256 drives fitted – will no doubt appeal to the Three Inch Knockers Club.

If your ROM box is full up, then at £29.95, even with a bad manual, I think this is the one that might make you pull your keyboard a little further away from the monitor.

*RoDos is available from Romantic Robot, 15 Hayland Close, London NW9 0LH. 01-200 8870.*

```
|CLS
Morning, Jeff. How's the hangover?
|OPT,1,0
Loading messages off.
|OPT,4,2
File overwrite set to create backups.
|PRBUFF
16K printer buffer available.
Setting up silicon disc...
 |FORMAT,2,8
 |DRIVE,"A",8
 |A
Okay, working in silicon disc as Drive A.
And go easy on the keys, eh? I'm not as
young as I used to be!
```

***Figure V***

ACU

# GRYZOR

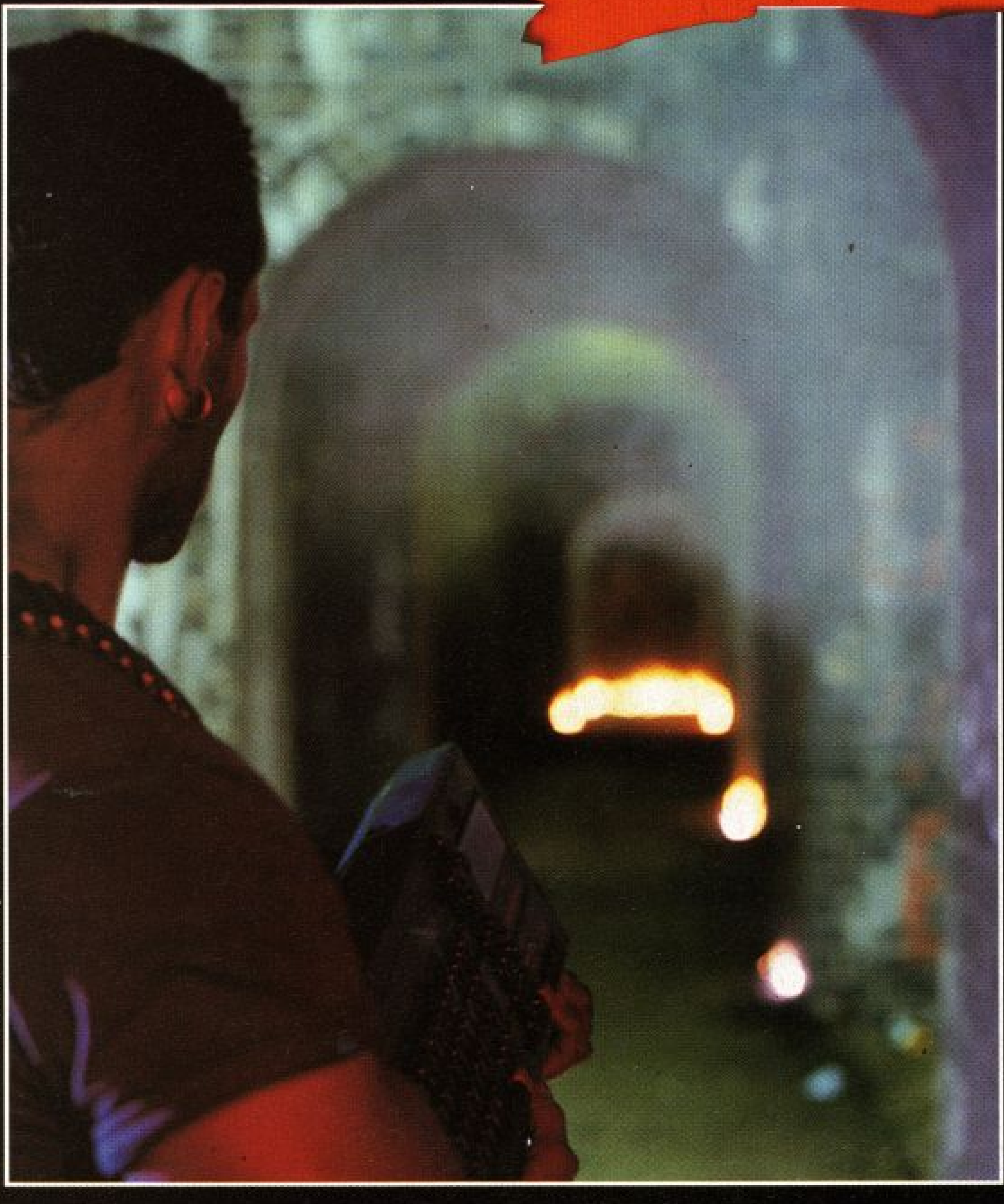


Photo: Martyn Howell

**Konami's arcade hit has been converted with panache by John Brandwood with graphics by Mark Jones to make it one of the smoothest games we have seen in a long time. Simon Rockman trekked to Imagine for a special sneak preview – the game he saw was not yet complete.**

One man and his gun. That is all you have to save the planet from a ravenous alien creature. Gryzor casts you as either Lance or Bill, a headbanded, mean sonofasprite. You have to invade a futuristic alien fortress, dispose of various guards and enter the chamber.

Things don't even start off gently. Working across a two dimensional scrolling landscape, a horde of aliens and robots confront you. They can be shot, but you'll need to be agile to avoid their bullets, which fill the air like rain on a bank holiday.

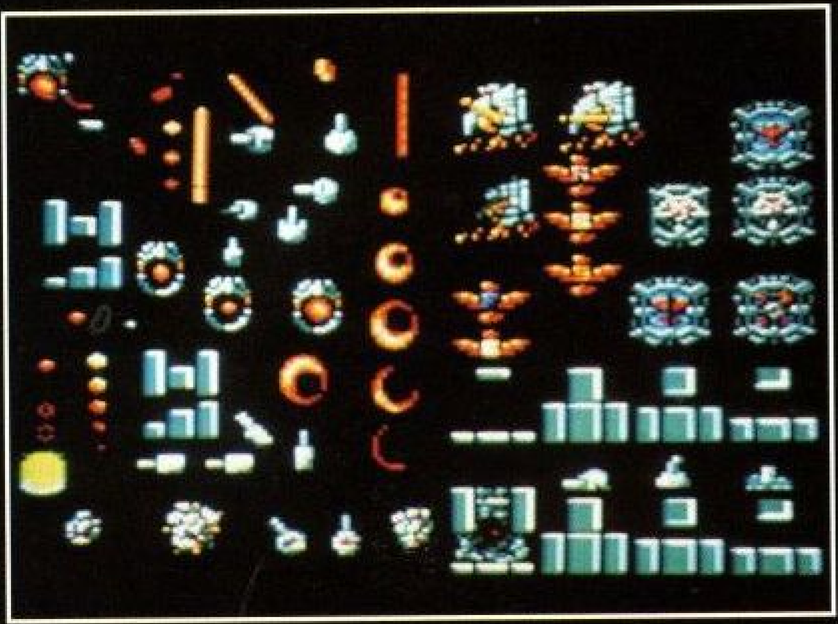
Your sprite is a flexible friend and will bounce at the joystick's behest. Some of the better armoured foes require a repeated onslaught before they perish.

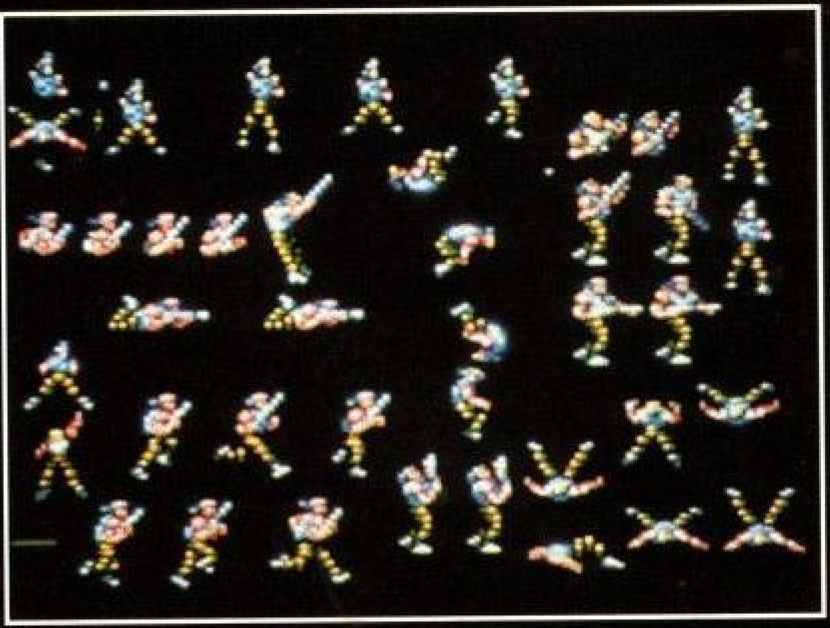
As you blast a path forward it is wise to hit some of the tame emplacements. These produce enhanced weapons, a flamethrower type laser, shield, and, best of all, a spread gun. This fires forward at three angles, not exactly accurate but bound to hit something, and in this game that something is certain to be nasty.

The landscape consists of mountains, rocks and bridges. You have a fair degree of freedom of movement which allows you to run along the rocks at between one and three levels depending on where you are.

At the end of the first level you meet the fortified door of the alien silo. This is heavily defended both on the inside and outside. In my experience it is best to remove the gun which lives at the top of the stronghold.

Watch out for the man in the bushes while you are doing it though, shoot him if you get the chance – or he'll get you. Then avoid the big gun for the moment,





jump down to the bottom emplacement and fill the rotating gun full of lead, plasma or microwaves.

Once this goes the way of the CPC 664 you are fairly safe. Move up to the middle ledge, lie down and blast away at the big gun. It will fire over your head. Keep going until the thing explodes.

Then it is into the metal corridors. The security forces come out like kleenex men *(Trekkie term for the security guards, they come out once, get killed and are thrown away)*. The blue sprites stand at the far end of a corridor and shoot at you. You look down at them and, if you are wise, shoot back.

Once again extra weapons are to be had as you shoot their projectiles. Wipe out all the men and you run down the corridor to another battle of a similar nature.

Progress through these caverns is depicted on a small display in the top right-hand corner. An electrified forcefield stops you from running down the corridor too soon, and once again you need to be nimble on your tootsies. Weapons are lobbed at your feet and torso. The former have to be jumped, the latter ducked. A good tactic here is to keep on jumping up to the right.

The arcade game shows the corridor getting bigger as you run down its length, in a programming compromise the Amstrad version shows your man getting smaller.

At the very end of the corridor lies the scene depicted in the screen shot printed here. A big emplacement armed with spread guns takes pot shots at you. You can dash into position, loose off a few rounds and then dive away from the machine's retaliation.

When you disable a spread gun a big eye appears. It will hurl fireballs which you must dodge, not to mention shots from the remaining spread gun. Take aim at the eye. Not easy, this is where I give up in the arcade.

Amstrad users will fight on. Having destroyed the eye you jump onto a lift which runs along the length of one of the vertical bars bordering the screen. This takes you to an area outside the complex. The scene is similar to that at the beginning of the game, except that the movement is up, up and away. Jumping from level to level there are more emplacements – with a store of better weapons, and more humanoids to blast.

Once again you are confronted by a mega-machine, this time with mandroids attacking from the sides to spice things up. You will have to defeat this to carry on.

The final scene is unlike any of the others. It doesn't really fit into the game very well, but then that is not Mark and John's fault, the design comes from Konami, the Japanese games wizards.

Wandering through the bowels of the space complex there are half biological, half mechanical traps to avoid. In the final conflict you have to confront a monster which looks like the mother out of Aliens. She has a weak heart, and must be shot, not with cupid's bow, but the meatiest gun you can lay your well-built hands upon. Then sock it to her right in the heart. The organ beats faster and finally blows. The game is won.

John Brandwood and Mark Jones work in-house at Imagine. This is not their first joint venture, Gryzor was preceded by Renegade. The style shows, and there is no doubting that they make an exceptionally good team.

Mark works on the graphics. Imagine video the arcade game and Mark uses the tape to examine the sprites. Konami have very little involvement with the conversion.

The sprites are designed using Amsoft screen designer. This has been especially modified by David Looker – the program's author – to save small sections of the screen. A couple of the screen shots here show what a screen full of sprites looks like. It is amazing how close they are to the original.

John writes the code to move Mark's sprites, scroll his backgrounds and play the game. Until recently all the programming was done on a 6128 with virtually everything DK'Tronics has ever made hanging off the back and a copy of Devpac.

The object code was sent down wires to a second 6128 which ran the program. This allowed John to play the game and edit the code at the same time.

Now Imagine/Ocean have a new system, based on an Atari ST, which assembles the code very much faster. It is Ocean's own software exclusively developed for in-house use. Until recently it suffered from being a little buggy, but now it is pretty stable.

Programs can be developed for Z80 and 6502 machines at present, with 8086 and 68000 to follow. This makes conversion very much simpler – essential for keeping a big software house profitable.

I used to think of Imagine as producing poor conversions. Having seen Gryzor and Renegade I have changed my mind. I eagerly await the forthcoming releases which include Rastan, Athena and Combat School. John says he would like to work on the ST next, and take a holiday. I think he deserves it. ACU

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# Spacing and your micro

## David Foster continues his hints and tips on using the CPC seriously

AS promised last time, this month I shall give one or two tips about using the Masterfile Database and shall also attempt to answer the first of the problems sent in by readers.

R.E. Hobday of Bedford is experiencing problems getting microspacing to work with his Quendata DWP1120 printer when using Protext and Promerge Plus. He defies anyone to make sense of that part of the Promerge manual. Fortunately, or unfortunately, depending on the viewpoint, he has come to the right place for help, as I just happen to be the person who wrote the Promerge manual.

Before describing the solution, it is probably worthwhile briefly describing exactly what microspacing does. When using a word processor with right justification on (to give straight right and left margins), the standard process is for the program to insert extra spaces into some of the gaps between words, so that the last word finishes at the right margin.

These are always full character width spaces, and the end result when printed is that the gaps between some words may be greater than others, depending on the number of spaces that had to be inserted.

While this is quite acceptable for most purposes, it is not as effective as full proportional spacing and justification. Proportional spacing, where each character only takes up the width required for that character, is only available with printers that have proportional printing ability, which excludes a lot of the less expensive machines.

Microspacing is a process that attempts to achieve, as far as possible, a similar effect with printers that cannot produce proportional output. It cannot alter the width of each character, but what it can do is even out the spaces between each word, so that when printed, all words will have an equal space between them.

## Using Promerge

Back to Mr Hobday's problems. Promerge, by default is arranged so that microspacing will work with any Epson-compatible printer, but it also includes the facility to configure it to work with most other printers. This is what is causing him his problems.

The Quendata printer is not Epson-compatible, so it is necessary to use the >MC (microspacing code) and >CW (character width) stored commands to configure Promerge.

When Protext prints with microspacing it calculates the number of microspaces required between each word, and every time it comes to the end of a word, it sends the codes (specified by >MC) the correct number of times to advance the print head the required number of 1/120in microspaces, so we must arrange the >MC code to send exactly one microspace.

The >MC command requires the printer codes necessary to advance the print head by 1/120 of an inch. Now this is where the fun starts and where Mr Hobday is critical of the manual. The problem is that with non Epson-compatible printers there is very little standardisation. Each machine tends to not only use different code values, but also to offer different facilities, which makes it all but impossible to describe the process for all models.

For example, most dot matrix printers will give the required 1/120in advance if put into double density graphics mode for one character, as described in the Promerge manual, but daisywheel printers do not have any double density graphics ability, so that things have to be approached slightly differently.

The Quendata does have a set of codes (ESC US n) which will set the amount that the carriage advances for each character to the amount specified by n and we can make use of this.

Figure I gives the sequence of codes required by Protext for the Quendata. The sequence of codes is created as follows:

ESC US n – 27 31 2 – sets the spacing pitch to 1/120in SPACE – 32 – prints a space
ESC US n – 27 31 11 – resets the spacing pitch to 1/12in

The Quendata manual details the method used to calculate the values of n for different pitches. It can be seen that first of all the printer is set to advance only 1/120in, then a space is printed, which will only advance the head 1/120in, and finally the spacing pitch is reset to that required by 12 pitch printing. This sequence will be sent repeatedly until the required space has been created.

Figure 1 also details the codes for 10 pitch and it will be seen that the only difference in the >MC code is the value to reset the spacing to 10 pitch. The character width, >CW, is also adjusted to reflect the wider characters. The method described above may be used with many printers.

## Masterfile tips

Masterfile, the database by Campbell Systems, has been around for almost as long as the CPC. It has now progressed through a number of versions, the most recent being Masterfile 3. This has

```
Codes required by Protext to microspace in 12 pitch with a Quendata.

    >MS ON                      ; turns microspacing on
    >MC 27 31 2 32 27 31 11     ; codes to send one microspace
    >CW 10                      ; sets character width to 1/12

Codes required to microspace in 10 pitch.

    >MS ON                      ; turns microspacing on
    >MC 27 31 2 32 27 31 13     ; codes to send one microspace
    >CW 12                      ; sets character width to 1/10
```

*Figure I*

been substantially rewritten to simplify its use, extend the functions available and increase the maximum size of database that may be created.

Masterfile 3 makes use of the second bank of memory on the CPC6128, but may also be used on the other models in conjunction with the DKTronics 64K add-on memory, which greatly increases the size of database to over 60k.

Someone was asking recently on the Amster's Cage section of Prestel whether it was possible to import data back into Masterfile, having once exported it, so that parts of it could be altered using the Find and Replace functions of the word processor.

The simple answer is yes it can. But there is probably no need to do so. Masterfile 128 and Masterfile 3 both provide a "User Basic" facility that enables you to do just that sort of thing. The original Masterfile 464 can also be used in the same way as long as a copy of the Masterfile Extensions is purchased.

User Basic allows you to extract the contents of specified fields from the database, manipulate them using the normal Amsdos Basic and then return them to the database in their modified form. The facility is also provided to insert new data into an existing database.

This feature of Masterfile is extremely powerful, yet is one which is rarely used by most people, perhaps because they are afraid of losing valuable data if they get it wrong.

As long as you make sure that you test it out on a copy of the data file, you can't cause any damage, so there is nothing to worry about.

User Basic provides you with the facility to do such diverse things as perform calculations on the contents of two or more fields in a record and to put the result into a different field, globally remove the contents of certain fields in a database, to selectively remove them (or even complete records).

If I used a database to keep the membership records of a club, at the end of the year I would want to amend all the records so that they no longer showed the amount of subscription paid in the previous year, nor the date paid. To go through each record and alter it would be a slow and painful process, though one which must frequently be carried out with many databases. With a few lines of User Basic, it is only a matter of minutes' work.

Similarly, part way through the year. I would want to go through the records and remove the records for those people who had not paid their subscriptions. See Figure II for an example of how to delete the contents of certain fields.

Users of earlier versions may also do the same thing, but will have to use the extra commands required to open and close the files with the Extensions program. Figure III gives the extra lines necessary to import new data into an existing Masterfile 3 database.

```
Extra lines required in loader to delete
fields from a Masterfile 3 database.

200 LOCATE 13,10:PRINT "Erasing Amount p
    aid and Date paid fields - Please wa
    it."
210 REM fields to be erased have data re
    ferences P and D.
220 n=1:ind$=""
230 WHILE 1
240 CALL getr,n,@ind$:n=n+1:IF ind$="E"
    THEN 100
250 REM alter data references in followi
    ng line according to data reference
    names and add more calls if more tha
    n two fields are to be cleared.
260 d$="P":CALL erad,@d$:s$="D":CALL era
    d,@d$
270 WEND
270 PRINT CHR$(7);:RETURN
```

*Figure II*

## Pretty in print

Qualitas is a utility program to provide near letter quality printing on printers not normally capable of handling NLQ. This is not the whole story, however, as it also provides a number of extra fonts and facilities.

Qualitas runs under Amsdos and works by redirecting output that would normally go to the printer port to its own routines. It is therefore suitable for use with any of the CPC range of computers.

The manual is heavily angled towards the use of Qualitas with Tasword and to a lesser extent with Protext. It can actually be used with a number of other programs and from Basic.

Disc and tape versions are available supplied in a hard videocase type of box with an eight page manual. An additional sheet gives details of how to use the special version provided on the disc for use with Tasword 6128.

The sheet also gives details of a short Basic program to be used if Qualitas is to be used with Promerge. If eight pages doesn't sound a lot, then fear not, because all the details required to customise the program are there, as are instructions on how to use both the program and the supplied font editor. Concise, but not missing anything vital, would describe it well.

The manual doesn't directly make any mention of the fact that Qualitas is only suitable for Epson-compatible printers that are capable of quadruple density graphics output, though this is mentioned on the back of the box.

Most modern dot matrix printers are capable of quadruple density graphics, and the vast majority of the better known ones are sufficiently Epson-compatible to be used with Qualitas.

As most people will be well aware, the Centronics printer port on the Amstrad CPC is only a seven bit port, which means that it isn't possible to send codes higher than 127 to the printer. One of the effects of this is that with some of the supplied fonts it is not possible to have proper descenders on characters. Descenders are the bits of characters like q and y that normally hang down beneath the line.

Eight bit printer ports are available as add-ons and Qualitas will make full use of these, if present. Two complete sets of fonts are provided, one for 7 bit ports and the other for 8. The best results will obviously be obtained with an 8 bit port, although the 7 bit fonts are well designed, and the lack of true descenders is not very obvious.

Before you use Qualitas you have to create your own working copy of the program and customise it to suit your printer. The procedure is to run a program called CUSTOM and answer a number of questions. Answers usually

```
Extra lines required in loader to import
new data into a Masterfile 3 database.

200 CLS: INPUT "Enter name of Import fil
    e",import$
210 CLS:LOCATE 13,10:PRINT "Importing da
    ta - Please wait"
220 OPENIN import$
230 WHILE NOT EOF
240 CALL insr: REM insert a new record
250 LINE INPUT#9,a$: REM read first line
     (name)
260 LINE INPUT#9,b$: REM read second lin
    e (address)
270 INPUT#9,c$: REM read blank line betw
    een records
280 REM add further LINE INPUT lines for
     more fields
290 REM N and A in the two following lin
    es are the data references in the da
    tabase for the name and address fiel
    ds
300 a$="N"+CHR$(32)+a$:CALL putd,@a$: RE
    M insert field
310 b$="A"+CHR$(32)+b$:CALL putd,@b$: RE
    M insert field
320 WEND
330 CLOSEIN
340 PRINT CHR$(7):RETURN
```

*Figure III*

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only require the selection of a number or a yes/no answer. When complete, the modified code is saved on to your disc. All that you then have to do is transfer the correct font sets to the disc as well.

Five fonts are provided with the program. All are of NLQ quality. Classic Pica is a version of the traditional printer font and is 10 pitch (10 characters to the inch). Classic Elite is the NLQ equivalent of the usual Elite 12 pitch typeface. Piazza is a 12 pitch italic typeface, while Mercury is described as an electric typewriter typeface and is 10 pitch. The final font, Clarion, has a proportional typeface intended to give a typeset appearance.

I understand that further character sets are available, which extend the range of characters that may be printed in the various fonts, rather than increase the range of fonts available.

A font editor is provided as a separate program and given time and patience you could create your own fonts, or modify the supplied ones to suit your needs. If you want accented characters, this can be done by modifying one or more of the rarely used characters, which you would then use in the document where you wanted the new character to appear.

When you first run Qualitas you have to specify the font you wish to use and, optionally, an alternative one. You may not have more than two fonts loaded at a time, but you can still use any of the normal fonts and typestyles of the printer.

The order in which you have to load Qualitas, any 8 bit port software and Protext or Tasword varies according to the version being used and these are all detailed in the manual.

When used with Tasword or Protext, you must also define a number of the printer control codes to send the values to turn Qualitas on and off. You should also specify a code for double height Qualitas. Once done, you can save the codes in the normal way (as part of the printer driver in Protext and as part of the program save option in Tasword).

At this point you can create a document, and if you print it out all the normal typestyles that your printer can handle will be available. If you want to use the Qualitas font you must turn it on with the control code you specified for the purpose.

The codes to turn Qualitas on and off must be the first characters on a line, or unpredictable results may be obtained. From this point, until you turn it off, or specify the alternate font, all output will be in the main Qualitas font.

The alternative font may be called

This is a sample of Epson LX80 standard draft mode, which is typical of the default output from most dot matrix printers.

This is a sample of Epson LX80 Near Letter quality mode and is the example with which the Qualitas fonts should be compared.

This is Classic Pica, which is a font provided with Qualitas. It is 10 pitch and equivalent to the Epson NLQ mode.

This is Mercury, another of the Qualitas fonts and is also 10 pitch. It is described as being 'Electric typewriter style'.

This is Classic Elite, which is a Near Letter quality example of the Elite typeface and is 12 pitch, which is why it appears narrower.

*This is Piazza, which is the Qualitas version of an italic typeface. It is also 12 pitch.*

**This is Clarion and is the Qualitas Proportional font, which means that narrow letters take up less space than wide letters.**

This is Double Height Pica. Double height may be used with any of the Qualitas fonts.

Double Height, Double width Pica.

***Qualitas/Epson typestyles compared***

into operation by using the printer codes for italic to turn it on and off. In addition, most of the other typestyles normally available will still be available in the Qualitas font, such as condensed and enlarged.

There are some restrictions, however. Amongst the things you cannot do, are using condensed, superscript or subscript at the same time as Qualitas double height, or mixing double height and normal height on the same line.

Not only does Qualitas provide you with NLQ fonts, but it also microspaces the text. Normally you will find that when right justification is in use, some spaces between words are larger than others, as spaces are all in multiples of a character width.

With Tasword microspacing also has the advantage of correcting the misalignment of the right margin that can occur when printer codes are inserted into the text.

I haven't come across any bugs in Qualitas and it is convenient to use once you have got the hang of it. One thing which does puzzle me about the program is that in operation it gives the impression of being professionally produced, but the initial configuration somehow lacks the same polish.

It is an easy job on the CPC for the software to determine whether a disc drive is installed, yet every time you want to load or save anything you have to specify whether to save to tape or disc, which can get a bit monotonous.

You also have to confirm every menu selection by pressing Return, even though virtually all of the options only require a single keypress. These are small points though and what matters is how well it works.

Well you can judge for yourself from the samples above. I use an Epson LX80 printer which has NLQ, so an example of the standard NLQ is shown as well. I think the results compare well with the normal NLQ and you have the benefit of being able to use alternative typestyles.

If your printer does not have an NLQ capability and you would like one, then Qualitas is ideal. If you do have NLQ then you might still consider it worthwhile for the additional fonts and the double height styles.

There is a cost of course, apart from the money. Printing is much slower than draft printing and somewhat slower than normal NLQ, though not desperately so.

*Please keep your problems coming in, to Applications Advice,* Amstrad Computer User, *169 Kings Road, Brentwood, Essex CM14 4EF. I am sorry but I am unable to deal with individual enquiries directly.*

ACU

Part 11 ASSEMBLY POINT

# Something to shout about

**Peter Green looks at disc formatting, loops and the Amstrad FAR CALL (how much more fun if Locomotive had called this a SHOUT, p'haps not – think about it).**

THIS month's program is for disc users only, I'm afraid, but it fulfils a basic need which isn't entirely satisfied by the Amstrad's firmware, and also demonstrates a couple of ideas of interest to tape-based programmers. The program will format a disc in either drive, to either data or vendor formats.

This format subroutine can be adapted for use in any of your own programs – and in my opinion ALL programs that allow data to be saved to disc should include some kind of formatting option from within the program. Nothing is more frustrating than spending two hours in, say, Screen Designer, then trying to save your picture and discovering:

- None of your used discs have 17k spare for the picture.
- Your blank discs aren't formatted.
- Screen Designer cannot format a disc.
- Leaving Screen Designer to format a disc will lose your masterpiece forever.

It's easy to say that you should always make sure there's an adequate supply of formatted discs before starting work, but programmers are only human *(that's arguable – Ed)* and, like backing up your work every 15 or 20 minutes, the real and the ideal don't always match.

The main difficulty with formatting a disc is that there's no firmware routine to do it – Locomotive Software only provided a system CALL that will format a single track. Hence we need a loop structure that sets up the required parameters and does the format for each of the 40 tracks on the disc. As each track is formatted, a message is displayed with the current track number that lets you know how the program is getting on.

## The joy of sectors

You may be wondering why it's necessary to format a floppy disc at all. After all, a cassette tape is made of oxide-coated plastic, just like a disc, but tape users don't have to run their cassettes through a formatting program before they can use them.

The difference is that a tape is a serial access storage device, while a disc allows random access. (Here I'm talking about accessing a particular file among several stored on a single tape or disc. Sequential or random access to data within a particular file is something different).

Let's start by making an analogy between a music cassette and a vinyl LP disc of the same album. If you want to listen to the fourth track, the cassette has to be wound on past the first three tracks using Fast Forward. The serial nature of the storage device means that there's no other way of getting from the start of the cassette to the required position.

On an LP, however, you just pick up the arm and drop the needle on to the fourth track *(Drop? You're not borrowing any of MY records – Ed)*. The fact that the data is stored over the area of the disc means that you can get at any portion of it directly.

In the same way, a floppy disc allows the computer to go straight to the data it needs, but there's an important difference. On an LP the music is still stored serially in a single groove that runs from the record's rim to its centre. The random access is possible because the stylus can be moved instantly to any point in the groove.

But data on a floppy disc is NOT stored in a continuous magnetic track spiralling in from the outer edge to the hub. The electronics and mechanics needed to keep the read/write head positioned accurately over such a track would make a disc drive more complex, error-prone and expensive (a record player doesn't have the same problem because the stylus must follow the groove). Instead, a floppy disc stores data on many concentric rings, or tracks.

Now typically there are 40 tracks on a disc, and a single track can store a great deal of data – 4.5k on an Amstrad disc system. This is rather a lot in one go: many programs or files are shorter than this and to divide the disc capacity up in this way would be very wasteful. Hence each track is further subdivided into sectors (nine per track on the Amstrad discs).

Obviously a disc drive can very easily find a particular track – it just measures how far in from the rim the read/write head is positioned. Getting the location of a sector within a track is a bit trickier however, even though the start of a track is indicated mechanically by the small index hole punched in the disc near its hub.

Briefly, each track needs a series of carefully-timed data pulses written to it which divide it up into the sectors. You can think of these sector identifiers as being analogous to the lines ruled on the pages of a notepad – and so, finally,

we come to the reason why a disc has to be formatted. It is to prepare the disc for future data storage by laying down the sector IDs.

## Program guide

The basic layout of the formatter program is quite straightforward – the firmware handles all of the difficult, accurately-timed stuff involved in talking to the disc drive controller chip. All we have to do is pass it a few simple parameters.

The program first checks that discs are actually fitted, by using the firmware mechanism for accessing external rom commands. If the disc drive is plugged in the computer's initialisation will have logged on several new bar commands to the firmware, such as |DISC, |A, |B and |USER.

KL–FIND–COMMAND takes a pointer to the command string in HL and checks through its list of external commands and RSXs. If it finds the command, the carry flag is set and HL and C contain the "far address" of the command (HL = address, C = rom select number). No carry means no command and hence no discs. The command string must be in capitals and have the top bit of its last letter set (that's what the "C"+&80 does).

I've used |DISC, but |CPM would also have been suitable: However, some commands like REN and ERA are also provided in commercial utility roms like Arnor's Utopia. These are obviously useless for uniquely identifying the presence of the disc drive.

The main program loop prompts the user for a keypress, and uses a simple range-checking subroutine A–range to filter out keys other than 1 to 5 inclusive. Notice that A–range needs the lower limit in the L register, but the upper limit PLUS 1 in the H register. The five options allow a disc to be formatted to either of the standard formats (data or vendor) in either drive A or B, or else to quit the program.

Incidentally, I strongly recommend always sticking to vendor format – I know data format gives an extra 9k of storage per side, but it makes the discs unusable on a CP/M system because the data format directory is stored on the wrong tracks. So, for example, you couldn't transfer your Amsdos Ascii text files into someone else's PCW 8256 for use with LocoScript – something I often have to do.

Now to a Z80 instruction that I've used virtually in every article this series, but have so far failed to explain properly: DJNZ, which stands for Decrement B and Jump relative if Non-Zero.

The value in the B register is decremented – if the result is non-zero, a relative jump is made to the label following the DJNZ. If the result is zero, the jump is ignored and the program drops through to the next instruction after the DJNZ. Although the number in B is changed, the test for zero is made without affecting the Z80 F register, all flags being unchanged (often useful).

Being a relative jump, the branch can be forwards or backwards (in fact the range is –126 to +129 bytes). Both types are used in this month's program.

Normally the B register is loaded with the initial value of a loop count, and the jump is backwards, so that a program loop is done B times (because B is decremented, then tested, an initial value of zero actually loops 256 times). This is the machine code equivalent of a Basic FOR...NEXT loop with a step of –1, and an example can be seen in the subroutine set–buff–entry, which uses DJNZ to loop nine times.

The other common use for DJNZ is to use a series of consecutive forward jumps to pick out a particular numbered routine, as shown here following validation of the keyboard input. Each DJNZ jumps forward to the next, until B hits zero – then the code corresponding to the original value in B is executed.

## It is a far, far address I do...

Much of the rest of the program is simple enough to follow from the comments in the listing, but the methods used in the format subroutine are of special interest. Normally we're only interested in accessing files from disc in the same way as cassette files, using CAS–IN–OPEN and so on.

In a program like this, though, we need to use the more specialised disc functions to pre-select the format parameters, and actually format a track.

CP/M has a an extra jumpblock that provides these firmware calls, but under Amsdos this jumpblock doesn't exist (as I've pointed out in previous articles, its location, &BE80, is a good place to put small Amsdos-only machine code routines). However, a range of these functions IS available to Amsdos via single letter bar commands, Ascii 1 to 9 (CTRL–A to CTRL–I, codes which cannot be typed in as keyboard commands, so Basic users can't wreak disc havoc with a careless keypress).

We need two of these single-letter functions, Ctrl–C (SELECT FORMAT) and Ctrl–F (FORMAT TRACK). Each is located using KL–FIND–COMMAND, which returns the rom number in C, and the actual address in HL (Amstrad call this three-byte address a "far address"). Since SELECT FORMAT only requires its parameters to be passed in the A and E registers, the "far call" can be made with KL–FAR–PCHL, a routine which calls the far address in C and HL.

However FORMAT TRACK needs a parameter to be passed in HL too, so HL cannot also contain part of the far address. Here we need the more complicated type of far call, the RST 3 instruction which takes the far address as an "inline parameter".

The Z80 has a set of eight RST opcodes. These are special CALLs. Normally a CALL is followed by two bytes specifying the actual address to CALL. Because the address is stored after the CALL op-code it is called an inline parameter (ie the data is part of the sequence of program bytes rather than the contents of a register).

The RSTs are single byte op-codes and need no inline address because each one always CALLs a fixed address. These are set eight bytes as are single byte op-codes and need no inline address because each one always CALLs a fixed address: these are set eight bytes apart at the bottom of memory. That is, RST 0 means CALL &0000, RST 1 means CALL &0008, RST 2 means CALL &0010, RST 3 means CALL &0018 and so on.

The computer designer can put any code in these locations that he likes. Amstrad have put code at RST 3 that fetches the two bytes after the RST, and uses them as an address pointer to three more bytes which make up the far address to be called. Thus the far address can be stored as part of the program, and all the Z80 registers are free to pass parameters.

You can see how assembler labels make this easy to set up. The label after the RST 3 (format–track) sets up the correct inline parameter (this should work OK on Amstrad-specific assemblers) and the three bytes reserved at the actual location of format–track are filled in with the values of C and HL returned by KL–FIND–COMMAND.

● *Next month we will see how a program like this can be hidden behind windowing menus.*

```
org &8000

.KM_WAIT_CHAR          EQU &BB06
.KM_READ_CHAR          EQU &BB09
.TXT_OUTPUT            EQU &BB5A
.TXT_WIN_ENABLE        EQU &BB66
.SCR_SET_MODE          EQU &BC0E
.KL_FIND_COMMAND       EQU &BCD4
.KL_FAR_PCHL           EQU &001B

LD LE          EQU &BB66
.SCR_SET_MODE          EQU &BC0E
.KL_FIND_COMMAND       EQU &BCD4
.KL_FAR_PCHL           EQU &001B

LD HL,disc
CALL KL_FIND_COMMAND   ;Check that disc drives are actually fitted!
JR C,main_program      ;Do program if disc(s) fitted
LD HL,no_disc
CALL print             ;Else print error message
JP KM_WAIT_CHAR        ;Wait for a key-press and exit

.disc
TEXT "DIS","C"+&80

.no_disc
TEXT "Disc drive not fitted - press a key to abort",0

.main_program
LD A,1
CALL SCR_SET_MODE

.input
LD HL,question1
CALL print
CALL flush
CALL KM_WAIT_CHAR
LD HL,&3631            ;L = lowest char, H = (highest char + 1)
CALL A_range           ;Check that A is &31 to &35 inclusive
JR NC,input            ;Loop if input out of range

SUB &30                ;Else alter range to 1-5
LD B,A                 ;Move to B as counter

.setup1
DJNZ setup2            ;Jump forward if B<>1
CALL format_A
CALL format_V
JR do_format

.setup2
DJNZ setup3            ;Jump forward if B<>2
CALL format_B
CALL format_V
JR do_format

.setup3
DJNZ setup4            ;Jump forward if B<>3
CALL format_A
CALL format_D
JR do_format

.setup4
DJNZ setup5            ;Jump forward if B<>4
CALL format_B
CALL format_D
JR do_format

.setup5
RET                    ;Abort selected - just quit

.do_format
CALL format            ;Format the disc
LD HL,question2
CALL print             ;Ask whether another disc is to be formatted
CALL flush
CALL KM_WAIT_CHAR      ;Fetch answer from keyboard
CP &FC                 ;Was ESC pressed?
JR NZ,input            ;If not, loop back and do it all again
RET                    ;Else quit

.question1
TEXT "Select required operation:",13,10,10
TEXT "<1> Format A: as vendor",13,10
TEXT "<2> Format B: as vendor",13,10
TEXT "<3> Format A: as data",13,10
TEXT "<4> Format B: as data",13,10
TEXT "<5> Abort the program",13,10,10,0

.question2
TEXT "Press ESC to quit or any other key to",13,10
TEXT "format another disc",13,10,0

.format
;------------------------------------------------------------
; Format a floppy disc using specified parameters (drive, type)
;------------------------------------------------------------

LD HL,insert_disc
CALL print             ;Ask user to insert disc
CALL flush             ;Flush key buffer
CALL KM_WAIT_CHAR      ;and wait for a keypress

LD HL,ctrl_F           ;Point to external command
CALL KL_FIND_COMMAND   ;Find the far address of FORMAT TRACK
JR NC,format_failed    ;Couldn't find the command

LD (format_track),HL
LD A,C
LD (format_track+2),A  ;Else store the "far address" at address format_track

LD HL,ctrl_C           ;Point to external command
CALL KL_FIND_COMMAND   ;Find the far address of SELECT FORMAT
JR NC,format_failed    ;Couldn't find the command

LD DE,(drive)          ;D = first sector number/E = selected drive
LD A,D                 ;Copy first sector to A
PUSH DE                ;Save number/drive
CALL KL_FAR_PCHL       ;Perform the SELECT FORMAT
POP DE                 ;Restore number/drive

LD A,D                 ;First sector number to A
LD C,1                 ;Constant increment for successive sectors
LD HL,header_buffer+2  ;Point to first table entry
CALL set_buff_entry    ;Set up sector numbers in header buffer

LD BC,&2800            ;B = 40, C = 0

.f1
LD HL,track
CALL print             ;Print the track message
LD A,C                 ;Fetch current track number
CALL AH_to_ASCII       ;Convert high byte to ASCII
CALL TXT_OUTPUT        ;Print it
LD A,C                 ;Fetch number again
CALL AL_to_ASCII       ;Convert low byte to ASCII
CALL TXT_OUTPUT        ;Print it
LD A,C                 ;Fetch number again
ADD A,1                ;Add 1
DAA                    ;using BCD arithmetic
LD C,A                 ;Replace track number in C

LD A,40
SUB B                  ;A = track number for current loop (in hex)
LD D,A                 ;Copy track number to D
LD HL,header_buffer
PUSH BC                ;Save loop counter/track number
PUSH HL                ;Save address of header buffer
LD C,0
CALL set_buff_entry    ;Set up track number in header buffer
POP HL
POP BC                 ;Restore registers

RST 3,format_track     ;FAR CALL to disc routine to format the track
JR NC,format_failed    ;Skip if some kind of error
DJNZ f1                ;Else do all 40 tracks

LD HL,format_OK
CALL print             ;Print success message
SCF                    ;Flag success

.format_failed
LD HL,f_fail
CALL NC,print          ;If failed, say so

.f2
RET                    ;and return

.set_buff_entry
;---------------------------------------------
; Set up entry in sector buffer table
; Entry; HL points to first entry
;        A holds first value
;        C holds offset for successive entries
; Exit;  AF, B,HL corrupt, all others preserved
;---------------------------------------------

LD B,9                 ;One track has nine sectors

.sbe1
LD (HL),A              ;Store entry in header buffer
INC HL
INC HL
INC HL
INC HL                 ;Point to next entry
ADD A,C                ;Add required offset
DJNZ sbe1              ;Loop until filled all                ;Point to next entry
ADD A,C                ;Add required offset
DJNZ sbe1              ;Loop until filled all                ;Point to next entry
ADD A,C                ;Add required offset
DJNZ sbe1              ;Loop until filled all 9 entries
RET                    ;and exit


;-------------------------------
; Short parameter-setting routines
;-------------------------------

.format_A
XOR A                  ;Select drive number 0 (= "A")
JR fB1

.format_B
LD A,1                 ;Select drive number 1 (= "B")

.fB1
LD (drive),A           ;Store it in the drive variable
ADD A,65               ;Convert to ASCII for "A" or "B"
LD (drive_letter),A    ;Store it in the message string
RET

.format_Q
XOR A                  ;Zero flags "abort"
JR fD1
```

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```
.format_V
LD A,&41                ;Sector number for system
JR fD1

.format_D
LD A,&C1                ;Sector number for data

.fD1
LD (sector),A           ;Store required sector number
RET

;--------------------
; Messages, variables
;--------------------

.insert_disc
TEXT "Insert disc to format in drive "

.drive_letter
TEXT " : ",13,10,"Press any key to continue",13,10,10,0

.track
TEXT 13,"Track number ",0

.format_OK
TEXT 12,"Format successful",13,10,0

.f_fail
TEXT 12,"Format failed - do not use disc",13,10,0

.format_track
RMEM 3                  ;Reserve 3 bytes for "far address"

.drive
BYTE 0                  ;Required drive no

.sector
BYTE 0                  ;Required first sector number

.header_buffer          ;9 entries, one per sector
BYTE 0,0,0,2
BYTE 0,0,0,2
BYTE 0,0,0,2
BYTE 0,0,0,2
BYTE 0,0,0,2
BYTE 0,0,0,2
BYTE 0,0,0,2
BYTE 0,0,0,2
BYTE 0,0,0,2

.ctrl_C
BYTE &83

.ctrl_F
BYTE &86


.AH_to_ASCII
RLCA
RLCA
RLCA
RLCA                    ;Move high nibble to low nibble, then drop through...

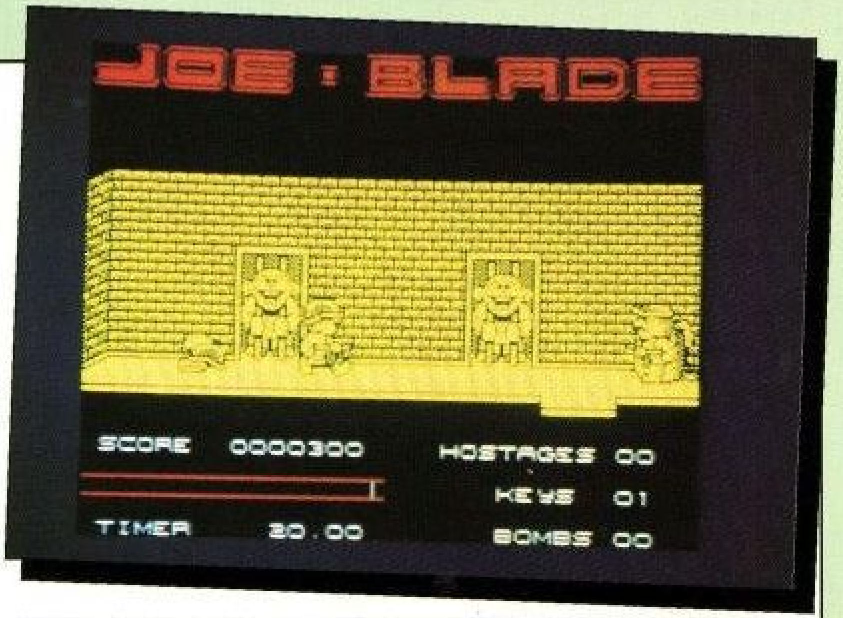
.AL_to_ASCII
AND &0F                 ;Keep low nibble only
ADD A,48                ;Add ASCII code for "0"
CP 58                   ;If code is "0" to "9", then
RET C                   ;quit
ADD A,7                 ;Else adjust code to "A" to "F"
RET

.print
LD A,(HL)               ;Not sure how I'd do without this routine...
INC HL
OR A
RET Z
CALL TXT_OUTPUT
JR print

.flush
CALL KM_READ_CHAR
JR C,flush              ;Keep reading keys until buffer is empty
RET

.A_range
CP H                    ;Compare A with H, setting carry if and only if A < H
RET NC                  ;so NC means A higher than required range
CP L                    ;Compare A with L, setting carry if and only if A < L
CCF                     ;Complement carry, so it's set if and only if L <= A
RET                     ;Return with carry set if and only if L <= A < H
```

ACU




## JOE BLADE

SOMETIMES it seems that Norns of Fate have a real sadistic streak running through their collective psychological profile. Here's a nicely programmed game, at a good price – and by an unfortunate coincidence Players has released it just as the backlash arrives in the wake of the events at Hungerford. The game, needless to say, features a Rambo-like character wandering around an enemy camp and using his rifle on anyone that gets in his way.

Considerations of taste and timing apart, Joe Blade is good budget fare. You take the role of the American loner on a mission into the heavily guarded terrorist camp where a number of hostages have been imprisoned. Joe has quite a maze of cells, offices, corridors and roadways to explore and the hostages are never found in the same place twice. The screen displays a side-on view of Joe walking left and right along the pathway at the bottom: Doors also lead "into" and "out of" the screen into adjacent rooms.

Unemployment is evidently no problem if you're a terrorist – they swarm all over the place. However, the YTS training scheme doesn't seem to be working out too well, as none of them have got the knack of shooting back at you: They simply pace backwards and forwards across the screen. Touching an enemy does reduce Joe's stamina at an alarming rate, leading to a complete state of death and a short dirge, so the best bet is to mow them down as and when they appear.

Once your ammo runs out, you have to rely on leaping nimbly over the guards, unless you've come across an enemy uniform lying on the ground. Wearing this lets Joe walk about with impunity *who's he? – Ed*, at least until the uniform inexplicably dissolves. These boys have obviously never heard of fabric conditioner.

Other goodies carelessly strewn around the barracks include food (to replenish lost stamina) extra ammunition and cell keys. These don't actually open the cells, but let Joe pass through the any locked interconnecting doors. The keys are as fragile as the uniforms, only working once and then disappearing.

Funnily enough the hostages aren't in the cells anyway, but appear to be having a nice kip in the corridors. The real cell inmates aren't worth rescuing, anyway: They all look like Snow White's Dopey having hysterics.

The final items to be found in the barracks are bombs. Touching one starts a timer, giving you 30 seconds to activate the device before you are killed. Setting the fuse involves solving a puzzle which is probably beyond Johnny Rambo's capability – the letters A to E are scrambled and you have to swap them back into alphabetical order, the catch being that only certain pairs can be swapped. Once triggered, the bomb timer allows 20 real-time minutes to find the remaining hostages and reach the exit before the barracks blows up.

***Author: Players***
***Price: £1.99***

**Nigel**

The graphics are tidily drawn in four-colour Mode 1, although the brick wall backdrops get a bit repetitive. Animation of the large sprites is smooth and flicker-free, and the loading screen is also well-drawn: Simple but atmospheric.

Sound effects in the game are sparse, but the main menu has a good three-voice tune.

It's nice to find a high-score table that uses keyboard entry instead of tedious joystick contortions. The gameplay will hardly stretch your brain and eventually gets a bit monotonous, but at this price you can't really go wrong.

16/20

**Liz**

Players' stuff is consistently good, and consistently underrated – the same goes for the sister companies of Pandora and Interceptor. Perhaps it is this insistence on quality which means that they have few releases, and it is the small number of releases which contributes to the low profile. Still, I'd rather have it this way. Joe Blade is not the best budget game Players has produced but it is still excellent VFM.

18/20

**Colin**

A competent enough piece of work by the three people involved but lacking in some of the finer touches that really top off a game. For example, I found it annoying that there is no indication in the score window of the amount of ammunition remaining. Keeping a mental tally isn't really on and you tend to run out when you're in the thick of things.

I would also have liked a timer to warn when the enemy uniform is going to dissolve: If it happens just as you're passing a guard you can lose a lot of stamina. Nevertheless, an enjoyable but undemanding maze game for the price.

15/20




# Z

SPACE, the final frontier, a place that my astronomy lecturer at university assured me was a vacuum, a really empty place with not much knocking around except the odd hydrogen atom every cubic centimetre.

Well, my lecturer seems to have got it all wrong. Every time I load up a computer game I find that space is actually filled to overflowing with all manner of strange lifeforms. It's so crowded out there that it qualifies for a local authority rehousing grant. Most of the aliens seem to have had unhappy love affairs, too, because they're mean and nasty sociopaths who want to kill me. So much for universal brotherhood . . .

Z, it says here on the packaging, is a place in the unknown where the shroud of death awaits in the land of the alien. Too right, mate. The gameplay area features a plan view on to a landscape which is being criss-crossed by all manner of lethal alien craft, such as droids (several types), meteorites, mother ships, control ships and flying saucers although the instructions call them a "saucims" and claim that they emits "missles".

Well, with a company name like Rino I guess spelling isn't one of their strong points).

Everything except the meteorites fire back at you, and somehow your opponents all seem so much better at dodging around your laser bolts than you are at dodging theirs.

Mostly your task is to improve the neighbourhood by blasting away and reducing everything in sight to a density of one hydrogen atom per cc. Enemies can also be destroyed by ramming them, but this tends to deplete your shields somewhat – run out of energy and kapow!

As an occasional diversion, energy bomb capsules drift across the screen. These can only be opened up by a well- aimed bolt from your laser. Then it's the thrill of the chase as you try to collect the energy bomb before it dissolves.

These bombs come in handy for reaching the next level in the game, as they are the only way of puncturing the force barrier blocking the entrance to the transporter unit. You need several bombs to blast a hole wide enough to pilot your ship through, and to make life harder the barrier (and any holes in it) scroll, making adjacent strikes trickier.

There are four levels, with increasing degrees of nastiness featuring backgrounds of an alien complex, a countryside battle zone, a lunar landscape and night-flight. On this final level you need to collect five of the energy bombs, at which point the alien control ship appears (no sense of strategy, these aliens) ready to receive the five direct hits which are the only way to destroy it.

Pretty the backgrounds may be, but they are essentially cosmetic except for the transporter unit. Hit this and you bounce, but with a considerable energy drain. As your ship's energy only recharges slowly, and running out causes your ship to disintegrate, care in navigation seems to be in order. It's a tough universe out there . . .

***Author: Rino***
***Price: £4.99***

### Nigel

This game is certain to be compared with Hewson's Uridium, but doesn't exude the same sense of style as its predecessor. The Mode 0 graphics are colourful but blocky, lacking Uridium's detail and the nice touches it had such as the ship's roll manoeuvre as you changed direction.

The play window is very small, probably to disguise how quickly the scrolling background wraps in both the vertical and horizontal directions.

And variety is conspicuous by its absence. Unlike the spacefighter, I can't see this one taking off.

9/20

### Liz

This is a pretty unremarkable shoot-'em-up, but at least Rino aren't charging full whack for it. On the other hand, I'd have thought budget prices were nearer the mark for a game with a tiny screen and only four levels.

The tape doesn't seem to take long to load, so I'm sure the memory is there to beef up the graphics and the gameplay. The sound effects are rather feeble too, only beeps and bangs.

There's no tune on the title page, no high score table, no real challenge. To sum up – Zzzzzzz.

8/20

### Colin

Initially this is very addictive, but the fascination soon palls. The first disappointment is how small the landscape is. This place is less like a planet and more like a parking space. If they had the whole place carpeted they'd get change from a tenner.

With a small screen and tiny planet there is not much for the processor to do other than scroll. This it does very well. Four direction scrolling is not easy, so there is some programming skill here. I think I'd rather pay £9.99 for a game with more in it.

14/20

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# MASK




EVER had one of those days? You know the sort, when an evil organisation bent on world domination drops a vortex bomb on to your HQ and scatters all your friends throughout space and time. Some mornings it just doesn't pay to set the alarm clock.

As Matt Trakker, master strategist of the forces of Mask, it's your job to pass through the vortex in your super vehicle Thunder Hawk and pick up all your lost buddies for a final assault on the Venom base. Sounds simple enough, but soon you discover the snags.

First, Venom have sent a pair of agents to each of four time zones (on the start level, one of these agents is yourself). Each agent has been separated from his "mask" (some sort of combat gear), and a sneak attack on Thunder Hawk at the start of the game has scattered the vehicle's equipment everywhere. That makes for a whole load of happy hunting.

Each of the Mask agents has been hidden in a doorway somewhere on the playing area. To locate an agent, you will need to find and switch on a personal scanner tuned to the agent: the direction finder on the Thunder Hawk dashboard then leads you to him.

But naturally it isn't quite that easy – to activate each scanner you must find and assemble (in the correct order) four parts of the corresponding security key (also lying around at random). When you manage to match four keys, they spell out a letter, which can be typed in on the keyboard to trigger the scanner. Now you can find your partner, and then go and pick up his mask (or your own on level 1).

The other items you can collect are Thunder Hawk's bombs, which are required to destroy obstacles blocking access to parts of the map, and repair kits, useful for patching up damage. Damage? Oh yes, I forgot to mention the tanks, jeeps, helicopters, falling boulders, acid pools, dinosaurs, laser turrets and a dozen other nasties that Venom unleashes upon you in the various time zones. A stroll through the countryside this ain't.

Each level is completed when you've found the scanner for the missing agent(s), chosen and assembled the correct set(s) of four security keys, located the agent(s) and reunited them with their mask. Then it's back to the vortex, where you are warped through to the next level.

On the fourth and final level you must complete the mission by totally destroying the Venom base. For this you have to hit it in certain selected areas with three of the Thunder Hawk bombs. Care is required when using your bombs: You automatically start the timer when you place them by the required target, and if you fail to get clear in time, Thunder Hawk goes up too!

Just in case this is all a little too easy for you, you're up against a time limit, too. Maybe today it should be someone else's turn to save the world . . .

***Author: Gremlin Graphics***
***Price: £8.99***

**Nigel**

This is the thinking woman's shoot-em-up, if that isn't a contradiction in terms. Not just mindless mayhem and slaughter, though there's plenty of that, but map exploration, strategic thinking, memory puzzles and a steady hand required on the joystick.

The graphics are great, very colourful and with large, well-animated sprites. Unlike many Mode 0 games, you can really see what everything is supposed to be.

There's a nice loading screen too, but my one quibble is that neither the instruction leaflet or screen tell you Mask is a multi-load game, requiring a keypress at certain points to continue.

18/20

**Liz**

I don't believe it. A licensed game that is NOT awful! Let's hope Gremlin has started a trend. The graphics are excellent and varied, with lots of smooth animation. I found it very difficult at first (keyboard control is nearly impossible – use a joystick) but after a while I started to get the hang of things and this is definitely one I'm holding on to.

Two gripes though. First, the game crashes if you have external roms except the disc fitted (even if they're disabled). I object to dismantling my hardware every time I play. Second, collision detection is a little too tight. Nevertheless – buy it.

19/20

**Colin**

MASK is a TV tie-in, which usually means the software house has spent a fortune on the licence and so does not have any money left to pay for the programming. Well perhaps Gremlin is a bit more far-sighted, or perhaps the Telly company was not as greedy as usual, but either way it works out that Mask is a good, exciting and well programmed game. Coming soon to a monitor near you Mask II. Shame the program is such rubbish.

19/20

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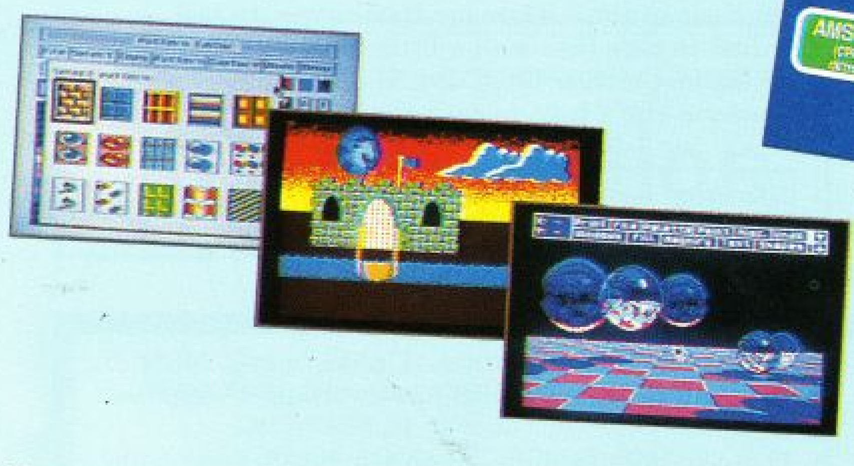
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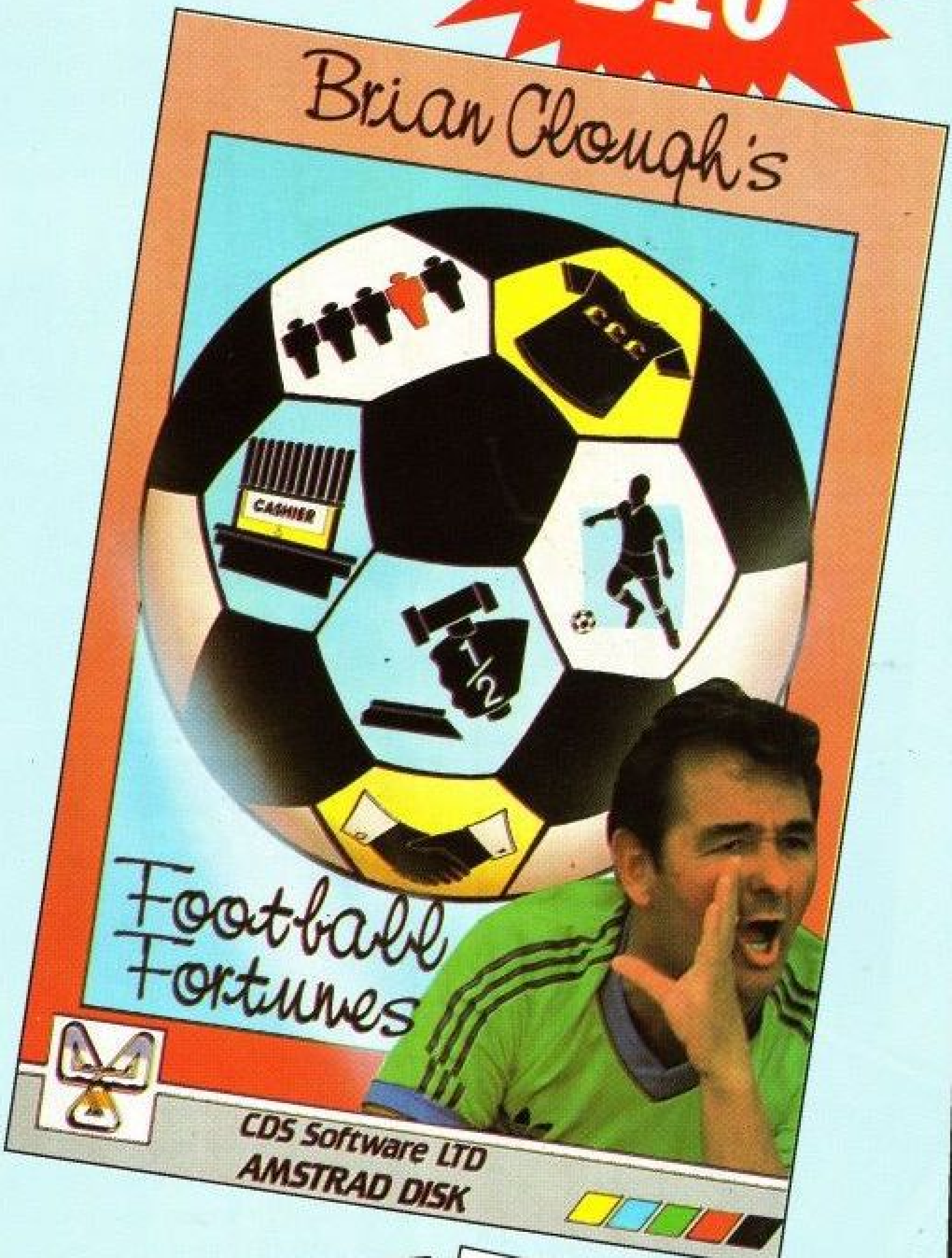
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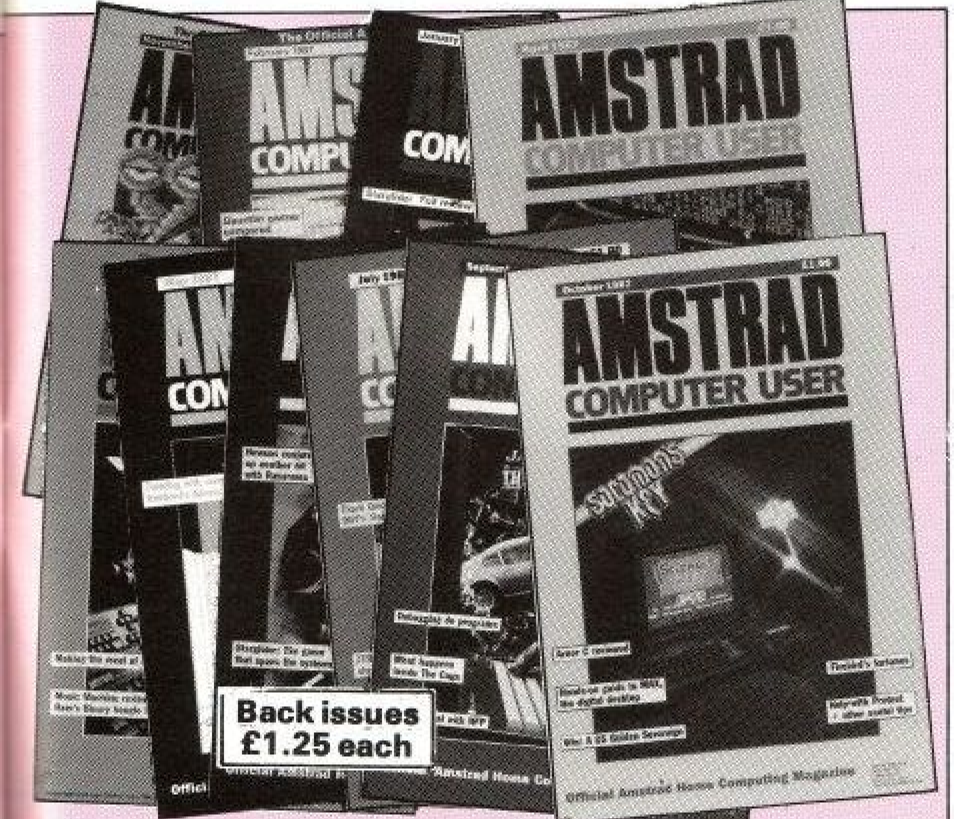
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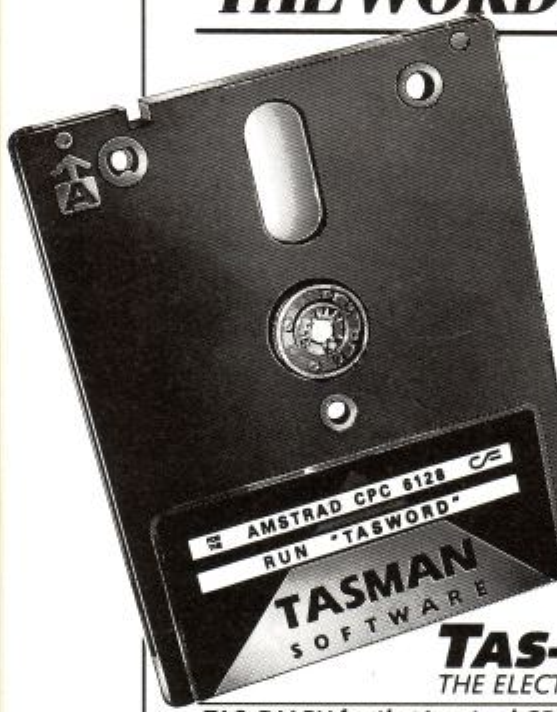
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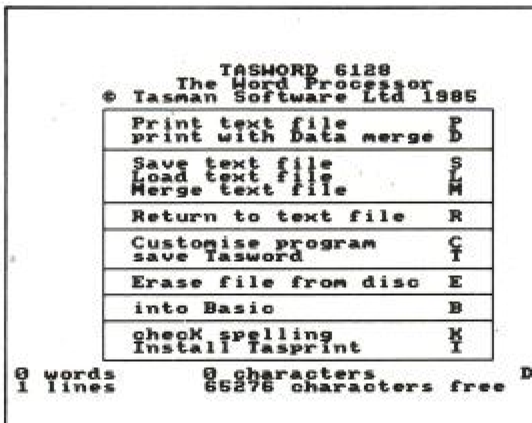
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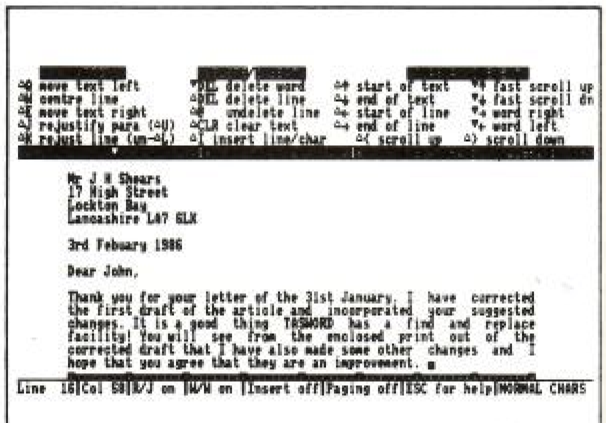
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# TASWORD 6128

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*Please note that TAS-SPELL will only work with TASWORD 464-D and TASWORD 6128.*

## TASWORD UPGRADES

*TASWORD 464 and Amsword owners: send your original cassette or disc (not the packaging) as proof of purchase and £13.90. Your original will be returned together with TASWORD 464-D or TASWORD 6128 on disc.*

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POPULAR COMPUTING WEEKLY, NOVEMBER 1984

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TASPRINT 464 and TASCOPY 464 drive the following dot-matrix printers:

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| EPSON MX-80 TYPE III | NEC PC-8023B-N | DATAC PANTHER II | |

# The Least Significant Bit

THINGS move apace in the trendy world of games software, so you need to be "in" to keep up with the personalities. Herbie Wright, numero uno at Firebird was spotted giving away his age by twisting to the sounds of Camden Palace Sixties night, obviously a night club regular. Unconfirmed rumours claim that his father owns the incredibly swish Xenon club in Piccadilly.

Time off is not quite as relaxing for members of the Amstrad staff – Thomas Power spent a couple of weeks on the fire-torn island of Rhodes. Still, even watching the local fauna go up in smoke is dull by comparison with Joss, a new recruit to Amstrad's technical staff. He is famed for going sailing with his family. So what, you may say. Lots of people go sailing. Yes, but they don't all end up shipwrecked and have to be rescued by the Canberra.

Still on the theme of exeant antics, the staff of Amstrad usually deride "punters" – that's you and me folks. But they spent the day punting on the Cam – the river with the bridge at Cambridge. After a day being a punter one member of the crew was very wet, but his wife, the irrepressible Suz, exacted revenge sweet enough to cause the evil doer to see stars. Talking of stars keep your eye on the box for the most famous 464 of all, the one that lives in Albert Square.

You may think that Colin only uses it to play Starglider while Barry is on the stall. No, Colin uses it as a graphic designer and is soon to be seen producing a logo with screen designer. And you thought that you only found out what was going to happen in East Enders by reading a newspaper with massive mammaries on page 3. ACU – the place where the Sun doesn't shine!

## Farewell

GOODBYE, Jane Nolan. For two years you have served *Amstrad Computer User* well as advertising manager. Now you are defecting to NewStar, home of NewWord, William Poel and Jeremy Spencer.

The magazine has been richer for your presence, spiritually as well as financially. Where would we have been without knowing that Waga-Wubba, a word with its etymological roots in the phrase "burning rubber" means that a page has no, or little yellow in it. Where else would we be without Jane's gift for explaining to advertisers that printing the wrong advert, upside down in the wrong issue of the magazine doesn't really matter because at least we got the phone number right this time? And where would we be without the excitement of a fight for the parking space?

NewStar will be richer by employing not only a great saleswoman but also having instant access to her mental database of who's who in Brentwood, where they went to school and who their brother is going out with. We'll miss you Jane.

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